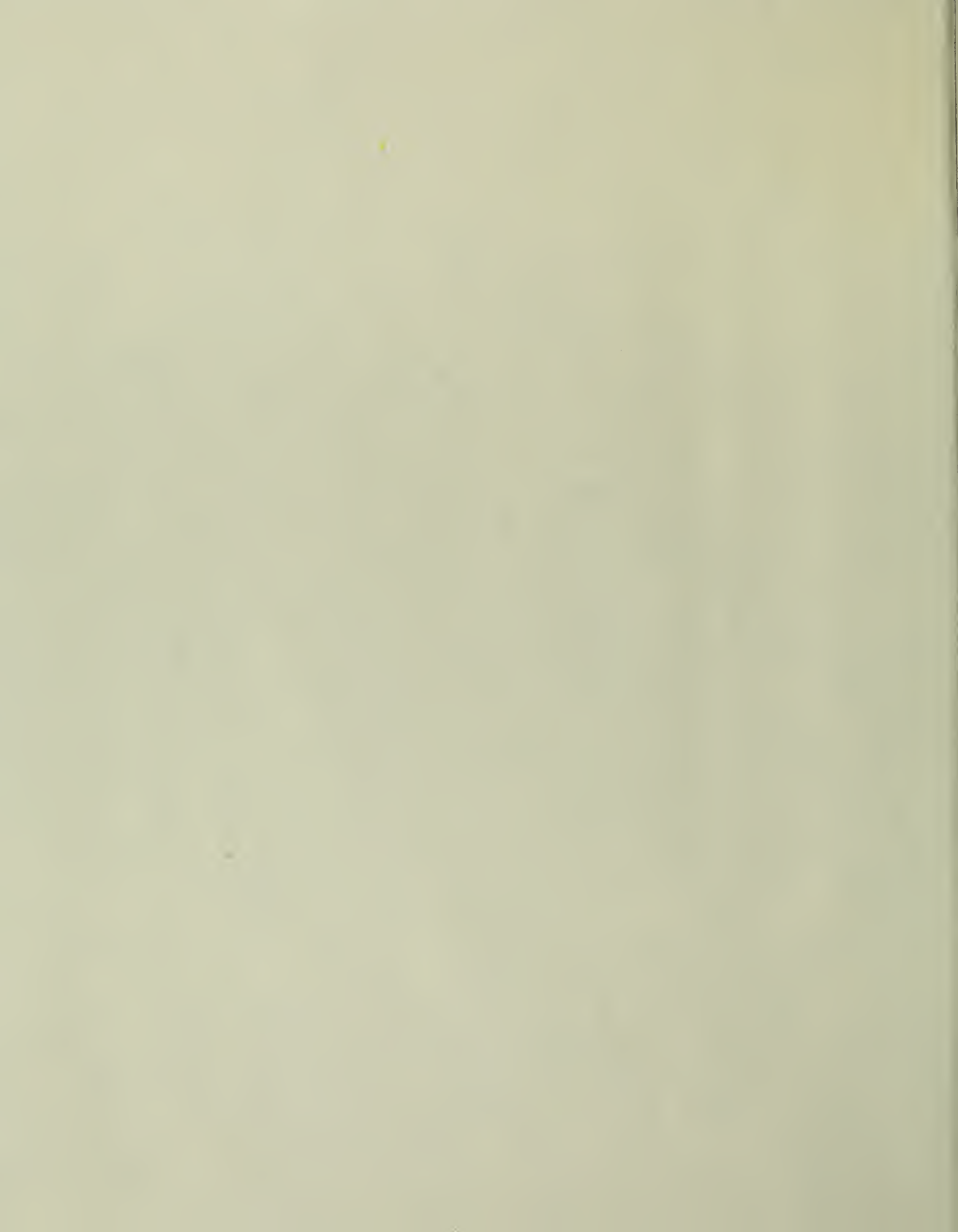




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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

Berne Meeting

Grizzly Critical Habitat Proposed

In a major step to protect remaining U.S. populations of the grizzly bear, 13 million acres of land in Montana, Wyoming, Idaho, and Washington have been proposed as Critical Habitat (F.R. 11/5/76). Five public hearings were held in December in Cody, Wyoming; Missoula and Kalispell, Montana; St. Anthony, Idaho; and Washington, D.C. These hearings provided a forum for public comments on the proposal.

The rulemaking represented the Service's preliminary judgment about which areas may be critical for the survival of the grizzly bear.

The rulemaking identifies four separate areas for consideration as Critical Habitat. These are the Bob Marshall Ecosystem in northern Montana, including Glacier National Park, the Bob Marshall Wilderness Area, and portions of the Flathead, Lewis and Clark, Helena, and Lolo national forests, and the Blackfoot and Flathead Indian reservations; the Yellowstone Ecosystem in Wyoming, Montana, and Idaho, including Yellowstone National Park and adjacent portions of Grand Teton National Park and the Custer, Shoshone, Teton, Beaverhead, and Gallatin national forests; the Cabinet Mountains of Montana and Idaho, including parts of the Kootanai, Kanku, and Lolo national forests; and part of the Kaniksu National Forest in Idaho and Washington. These areas together contain most, if not all, of the 600-1,200 grizzlies surviving in the lower 48 States.

A decision about how much of the proposed area should be included in a final rulemaking will not be made until the official comment period ends February 9 and all of the written and oral comments have been carefully reviewed. The Service also is participating in two major research efforts which should augment present knowledge of the grizzly's habitat needs and assist all Federal and State agencies in making decisions about grizzly management in the future (see accompanying article).

U.S. To Put International Treaty Into Effect In February; Listings Increase

The international treaty regulating commerce in Endangered wildlife is to be implemented by the United States in February.

The U.S. decision to move ahead with enforcement of the treaty followed the meeting of treaty nations in Berne, Switzerland, on November 2-6, 1976.

Final interim regulations governing the import and export of species listed under the Convention on International Trade in Endangered Species of Wild Fauna and Flora were to be published by the Fish and Wildlife Service's Federal

Wildlife Permit Office (WPO) in February.

The regulations will take effect upon publication. WPO expects to issue its first Convention permits shortly thereafter (see box).

How to bring about rapid and effective implementation of the treaty (which was negotiated in 1973) was one of the major purposes of the Berne meeting. Implementation has already begun in some countries, with most of the others being expected to follow suit in 1977.

Decisions at BERNE

Participating nations at the conference also agreed to give protection to a number of additional species of wildlife by listing them in Appendix I of the Convention (species in danger of extinction that are prohibited in commercial trade and severely restricted for other purposes). These additions include sea turtles, rhinoceroses, and primates.

(continued on page 2)

Convention Permits

In a recent statement, Richard Parsons, Chief of the Federal Wildlife Permit Office (U.S. management authority for the Convention) said that his office expects to begin issuance of the first Convention permits in February, as soon as final Convention regulations have been published and take effect.

Parsons went on to say that the procedure for applying for permits will be the same as for present Endangered Species Act permits, except that Convention permit applications will not be published in the *Federal Register* unless the species is also covered by the act. In that case, the requirements of both measures must be met in the application for and granting of permits.

He also added a word of caution: Although the lists of species covered by the act and the Convention are similar in some respects, they are not identical. Therefore, both lists must be checked to determine if either or both apply.

For the convenience of the public, Parsons expects to prepare a combined list of species covered by both measures soon after the final Convention regulations are published.



U.S. Fish and Wildlife Service Photo

*Mississippi sandhill crane wins suit.
See story page 7.*

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Of the 33 nations that so far have ratified the Convention, 24 sent representatives to the meeting. In addition, 13 other nations had observers present, as did 12 international scientific, conservation, and economic organizations.

Many of the administrative and procedural decisions made at the meeting, in addition to changes in listed species, may have a significant effect upon U.S. interests. Moreover, they will aid law enforcement and provide increased monitoring of commerce in wildlife.

Changes in Listed Species

Major actions taken at the Berne meeting included the following:

- Addition of all sea turtles, except Australian populations, to the strictly regulated Appendix I. Previously, only the Atlantic hawksbill (*Eretmochelys imbricata imbricata*) and the Mexican ridley (*Lepidochelys kempii*) were in this appendix. This action adds the Pacific hawksbill (*Eretmochelys imbricata bissa*), green turtle (*Chelonia mydas*), loggerhead (*Caretta caretta*), Pacific ridley (*Lepidochelys olivacea*), and leatherback (*Dermochelys coriacea*). These additions, prompted by strong statements by the International Union for the Conservation of Nature and Natural Resources (IUCN), the United Nations Environmental Programme



U.S. Fish and Wildlife Service Photo by Patrick Hagan

Loggerhead added to Appendix 1 of Convention

(UNEP), and various African and European nations, closes the door to all trade in sea turtle meat, skins, shells, and manufactured products, unless it can be documented that the product came from green sea turtles (*Chelonia mydas*) or flat back turtles (*Chelonia depressa*) originating in Australian waters or in captive mariculture.

- Addition of the black rhinoceros (*Diceros bicornis*) and southern white rhinoceros (*Ceratotherium s. simum*) to Appendix I (other rhinos were already listed in this appendix). Strongly supported by all African nations present at

the conference, this action will eliminate commercial trade in these animals, including importation of hunting trophies.

- Addition to Appendix I of five species of South American monkeys of the marmoset family (*Saguinis oedipus*, *S. leucopus*, *S. bicolor*, *Callithrix flaviceps*, and *C. aurita*) and the chimpanzees (*Pan spp.*). The United States also will conduct a further review to determine whether other members of the highly vulnerable marmoset family are in need of Appendix I protection.

- Addition of all other primates of the world to Appendix II of the Convention (except those already in Appendix I). This appendix, less restrictive than Appendix I, requires an export permit certifying that trade is legal and not detrimental to a species' survival. (Commercial trade is not automatically prohibited as it is in Appendix I.)

- Addition of the African elephant (*Loxodonta africana*) to Appendix II. This action was taken under a special provision of Appendix II (comparable to the "look-alike" provision of the Endangered Species Act of 1973), which states that species should be added to Appendix II if this will aid in controlling products from Endangered species. In this case, it is almost impossible to distinguish between ivory from the Endangered Asian elephant and the not-yet-Endangered, but declining, African species. The export permits required for African elephant ivory will help eliminate illegal Asian elephant ivory from the marketplace, and provide close monitoring of the African elephant trade.

- Addition of all timber wolves (*Canis lupus*), fur seals (*Arctocephalus spp.*), and wildcats (*Felidae spp.*) to Appendix II. This action was taken to help other nations control trade in wolves or wolf pelts from various Endangered Old World subspecies, although it was noted that Alaskan and Canadian wolves are not now considered Endangered or

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(continued on page 6)

GRIZZLY MANAGEMENT: Can Stable Populations Be Maintained in U.S.?

651-954
56-729

A solitary, often nomadic creature, the grizzly bear is an elusive prowler of forest and rocky ravine. For all of its great size, it is often difficult to detect on foot or from the air. From a distance, grizzlies look remarkably alike, making accurate counts very difficult.

Reflecting that difficulty, it is presently estimated that anywhere from 600 to 1,200 grizzlies roam the 20,000 square miles of wild country in Montana, Wyoming, Idaho, and Washington recently proposed as Critical Habitat. Whatever the exact total, so few bears spread over such a vast mountainous terrain pose complex management problems in trying to preserve the bears.

While the basic biology of the grizzly is known, many questions remain unresolved as to the type and amount of human activities the bear population can tolerate. The absence of accurate data has led to disagreements in the past among Federal and State agencies on the best methods for insuring the bears' long-term survival.

Research Projects

To help resolve the controversies and improve the data base, these agencies are cooperating in two major research efforts in the ecosystems supporting significant grizzly populations. The Yellowstone Interagency Grizzly Bear Study Team, a follow-on to the pioneering work of Drs. John and Frank Craighead, is composed of biologists from the National Park Service, Forest Service, Fish and Wildlife Service, and the States of Wyoming, Idaho, and Montana.

The team is trying to determine population status, habitat use patterns, and the effects of land development and other human pressures on the bear throughout the Yellowstone Ecosystem.

To the north, a second team has been formed by the same agencies, plus four Canadian provincial and federal agencies, four private conservation groups, and an Indian tribal council to conduct the Border Grizzly Project. This study, headed by Dr. Charles Jonkel of the University of Montana, is even more ambitious in that it covers a much larger area of northwestern Montana and adjacent states and provinces.

The goal of the study is to determine the status of grizzly bears in the area and other data which can provide management guidelines.

Both of the ecosystems under study are subject to increasing pressures of recreational, mineral, oil, and gas development. One of the present issues, for which research may provide some answers, is to what extent these human activities will affect bear populations, and what safeguards should be instituted.

Life History

From what is known, grizzlies are highly adaptable. This is evident in the size and variety of their former range, which once included all of the Western States and northern Mexico, as well as western Canada and Alaska. But because of their unpredictable temperament and inclination to become pests around human habitations, they cannot coexist with man. However, there are some activities which do not require large concentrations of humans, such as lumbering, that bears may adapt to.

One of the major management problems of the grizzly is that it does require large tracts of undisturbed range simply to find the food to support its giant bulk. Some bears have been known to weigh up to 1,200 pounds, but the average male is 400-to-600 pounds and females weigh somewhat less. They also need a relative amount of isolation at key times in their life cycle.

At birth, grizzlies weigh around one pound and are about 10 inches long. The common litter size is two cubs, but it can range from one to four. Born during

(continued on page 4)



National Park Service Photo

Ursus Arctos

Grizzly bears (*Ursus arctos*) come in different sizes and colors, but they can usually be identified by the prominent hump on their shoulders formed by muscles of their massive forelegs.

Other distinguishing features are a slightly dished face, extremely long claws, and large upper rear molars. Fur color varies from nearly white or ivory yellow to black. Commonly, grizzlies have light or grizzled fur on the head and shoulders, a dark body, and even darker legs and feet.

How big grizzlies grow is a matter of conjecture. Reports of grizzlies weighing 1,200-to-1,500 pounds or even more were common in older literature, but few of the authors making such reports actually weighed the bears. Twelve hundred pounds is probably close to the maximum, with 400-600 pounds the average for adult males; females are usually 25 percent lighter. There appear to be variations in size between different bear populations, further complicating the issue.

The grizzly was first described in the Lewis and Clark journals of 1805. For many years after that, American scientists debated about how many different species were involved in the grizzly-brown bear complex, and their relationship to Old World brown bears. The wide distribution of the species, combined with a perplexing amount of variation, prompted C. H. Merriam to recognize 86 different species and subspecies originally inhabiting North America.

However, more recent work by Robert Rausch of Alaska has led to a more reasonable classification identifying all of the world's brown bears as a single cosmopolitan species, *Ursus arctos*. Rausch's classification includes only two distinct North American races, *Ursus arctos horribilis* of most of North America, and *Ursus arctos middendorffi* (the Kodiak bear) of Kodiak and adjacent islands of Alaska. The dispute is not yet completely settled, for many scientists also recognize the relict Mexican population as *Ursus arctos nelsoni*. Also, the barren ground grizzly of the Alaskan and Canadian tundra may be distinct.

E. Raymond Hall of the University of Kansas is now undertaking a new, comprehensive effort to sort out the relationships of North American brown bears.

Grizzly (continued from page 3)

January-February in a winter den, the young rapidly gain weight and usually leave the den in the spring at about 10 pounds. They continue their rapid growth during the summer and, by the time they enter the winter den with their mother in October or November, they approach 100 pounds. Generally they remain with their mother through their second summer; siblings usually hibernate together, but separately from their mother, during their second winter.

Bears mate at most every other year in June or July, starting when they are three or four years old or older. Studies so far indicate a grizzly may live in the wild up to 25 years, which would allow females a maximum of about 10 breeding seasons; the average is probably considerably less.

After breeding, the bears become less active and fatten up on abundant summer foods, enabling them to survive the winter in their dens with no food. Grizzlies are not true hibernators. They become lethargic, sleeping much of the time, but their respiration rate and body temperature drop only slightly below normal. They can easily be routed from their dens; some actually remain active throughout the winter.

While denning, the grizzly's digestive system is inactive. As a result, the bear will lose tape worms and other intestinal parasites picked up during the summer.

Food Habits

The grizzly is omnivorous. In the spring, the bear eats early plants and digs for roots. It will feed on winter-killed game and prey upon young elk, moose, and deer.

In the summer, the main staple is a variety of leafy forest plants and berries. Grizzlies occasionally kill full-grown deer, moose, and other forest animals, when they can catch them. They will go to great lengths to dig ground squirrels and marmots from their burrows; in Alaska they are avid salmon fishers during the spawning season.

They also can become addicted to garbage dumps, and some turn into predators on cattle and other livestock. Such predation is relatively infrequent. When a bear develops the garbage or livestock habit, live capture and removal, or in the extreme case, killing the bear, are the only solutions.

Bear-Man Relations

In the wild, grizzlies tend to steer clear of man. Some authorities claim a grizzly will not attack a man unless provoked to defend itself or its young. An exception appears to be some bears in national parks. One theory explaining periodic grizzly attacks on campers in parks, which have resulted in maulings and fatalities, is that these bears may have been garbage feeders and, protected from hunting, have lost their fear of man. The occasional attacks have persisted despite the closing of garbage pits in 1971. Arguments for permitting grizzly hunting have been based, in part, on the idea that it will make the powerful animals fearful of man and make them keep their distance.

Hunting of grizzlies for sport in Idaho has been prohibited since 1947 because so few bears remain. Montana stopped it within the Yellowstone Ecosystem outside Yellowstone National Park in 1974, and Wyoming prohibited it in 1975, again because of the small grizzly population.

At present, the only sport hunting is in the Bob Marshall Ecosystem outside Glacier National Park, an area believed to contain about 600 grizzlies, and the kill is restricted.

Under Fish and Wildlife Service regulations, Montana has established an annual quota of 25 grizzlies, which can be killed for any reason in the area. A hunting season is allowed for a number of bears that is set by subtracting from the 25 limit those already taken as livestock predators or as a threat to human life, together with those that have died in accidents.

Future Management Issues

Biologists see a number of compatibility problems if grizzly habitat becomes more accessible to leisure and other pursuits. Campers and other recreational users, for example, may have to be trained in bear avoidance techniques, or perhaps denied entry to some areas during certain seasons. (Parts of Yellowstone National Park already are being closed at certain times of the year.)

The harvesting of timber within grizzly habitat needs to be examined to avoid adverse effects. It may be possible to institute practices which improve the habitat, such as leaving stands of whitebark pine as a grizzly food source. Reforestation could help reduce the bears' visibility and exposure to man.

Research needs to be conducted into the grizzly's tolerance for oil and mineral development. As with logging, seasonal adjustments may be indicated as to when particular areas can be explored, and the amount of land disturbance which should be allowed.

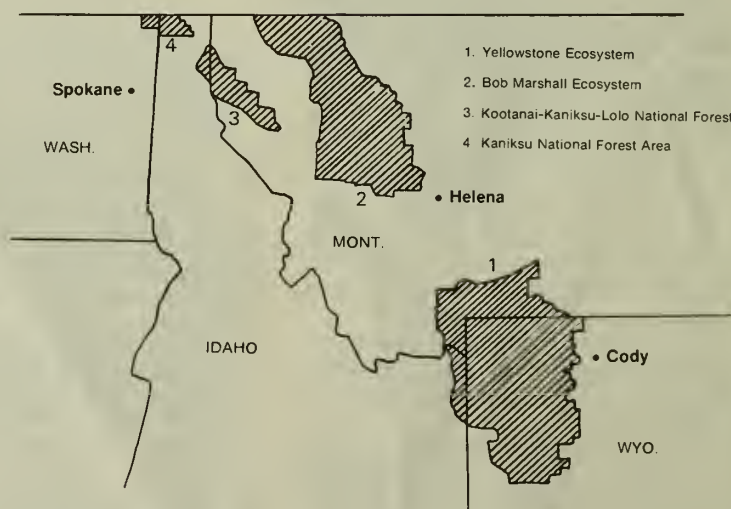
Roads built for logging and mineral

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Grizzly Bear Habitat



IN 100 YEARS, the grizzly bear has been all but eliminated from the lower 48 states. But substantial populations remain in Western Canada and Alaska.



A CLOSER VIEW of the four areas proposed as grizzly bear Critical Habitat. These ecosystems contain an estimated 600-1,200 grizzlies in an area totaling 20,000 square miles.

Colorado Transplanting River Otters; ES Program Expands

The river otter (*Lutra canadensis*) is returning to Colorado after a 75-year absence—thanks to a Colorado Division of Wildlife transplant project.

This is just one of approximately twenty projects that make up Colorado's program for Endangered and Threatened species. With a \$140,000 annual budget and a staff of five full-time biologists, this endeavor ranks as one of the most active State programs in the country.

The Division of Wildlife's Nongame Section, supervised by John Torres, is in charge of the program. The Nongame Section also has responsibility for the Federally listed Endangered species projects being funded by a \$100,000 Endangered Species Program grant awarded to the State.

The River Otter Project

In August 1976, six otters imported from Newfoundland—three adults and three juveniles—were released along the Gunnison River. In addition, three juvenile otters obtained from a fish hatchery in Oregon were transplanted to Chessman Lake in the upper part of the South Platte river basin.

Steven Bissell, a mammal specialist in the Nongame Section, says he hopes to import 250 river otters over the next four years and reestablish a viable otter population. The otter was extirpated in Colorado around the turn of the century, and currently it is listed as Endangered by the State.

At present the river otter program receives the bulk of its money from general revenue funds.

It is also being supported in part by the sale of 25-cent stickers to the public in cooperation with the Seven-Eleven Corporation (more than \$4,000 was raised in a few months during 1976). The program also raises funds through the sale of a \$5 conservation stamp.

An attempt is being made to enlarge the program by getting the State to place a check-off blank on state income tax returns so that citizens can designate \$1 to go toward nongame funding.

Other Mammal Projects

Biologists currently are setting up a statewide survey of nongame mammals. Areas on the west and east slopes of the Rockies already have been selected for studying small animals.

Special photographic and other sensing equipment is being acquired to study four substantial prairie dog colonies on the east slope to assist the search for the rarely seen blackfooted ferret (*Mustela nigripes*). Bissell says there have been some recent sightings of this Federally listed Endangered species by competent observers, but they have not been authenticated. Aerial photos are being used to assist in mapping the reported sightings.



A female river otter heads for the Gunnison River

Colorado Division of Wildlife Photo

Two verified observations of the lynx (*Lynx canadensis*), a State-listed Endangered species, have been made near Vail in central Colorado. Sparse populations of wolverine (*Gulo gulo*), another State-listed Endangered species, are believed to exist in the mountains along the Continental Divide. Reports of such observations, while not confirmed, are being recorded and mapped.

A survey of the San Juan Mountains in southern Colorado in 1970-72 failed to reveal the presence of the grizzly bear (*Ursus arctos horribilis*), but there are occasional unconfirmed sightings, Bissell says. There have also been increased reports of the gray wolf (*Canis lupus*), but again no verified sightings.

Birds: Mapping All Species

Distributional data have been compiled in a latilong mapping system for 112 species of birds. The project is now being expanded to cover all birds in Colorado, and will show their distribution, habitat, and relative abundance at various seasons.

One major bird project is enhancement of the white pelican (*Pelecanus erythrorhynchos*), a State-listed Threatened species. Efforts are underway to preserve a small island in Riverside Reservoir, near Greeley, where there is a colony of 200 breeding birds. The island has been badly damaged by erosion.

Another island has been constructed in a nearby reservoir, and large juvenile

pelicans have been transplanted there in an attempt to establish a new breeding population.

The State is concerned about the status of the greater prairie chicken (*Tympanuchus cupido*) and the prairie sharp-tailed grouse (*Pediacetes phasianellus jamesii*), which are both listed as Endangered in Colorado. There are less than 2,000 greater prairie chickens and only about 200 of the grouse. The chickens are being censused annually, and the State program hopes to acquire land to preserve their habitat.

The lesser prairie chicken (*T. pallidicinctus*), listed as Threatened by the State, is in better shape because its range lies on the Comanche National Grassland, which is under the jurisdiction of the U.S. Forest Service.

Three Federally listed Endangered species—the American peregrine falcon (*Falco peregrinus anatum*), the Arctic peregrine falcon (*F.p. tundris*), and the whooping crane (*Crus americana*)—are found in the State and are part of the Colorado program.

Fish Recovery Plans

An inventory under the direction of David Langlois has been made of potential backwater nursery areas for the Colorado River squawfish (*Ptychocheilus lucius*) and humpback chub (*Gila cypha*), both Federally listed as

(continued on page 6)

Endangered. The State also has completed habitat and population monitoring projects in the Gunnison, Colorado, and Yampa rivers, as part of the recovery plan for these two species.

Colorado has submitted a revised recovery plan on the greenback cutthroat trout (*Salmo clarki stomias*) to the Fish and Wildlife Service and is preparing to request that the species be reclassified from Endangered to Threatened status. State officials say the trout has a "good potential" for recovery and restoration as a game fish. Part of the Federal Endangered Species grant money is earmarked for more population inventories to track how the trout is progressing.

Community Projects

Because the Colorado program is dependent upon the public for support, it is making efforts to establish projects in urban areas that will benefit the public. Currently, consideration is being given to managing a 7.5-acre site in the Denver suburbs as a waterfowl viewing area. The person who maintained the site as a private refuge has donated it to the State. Steps also have been taken to establish an urban wildlife interpretive center in the Denver area.

The Colorado program is distributing a publication, *Cities & Birds*, by Non-game Section bird specialist Walter D. Graul to help city dwellers enjoy birds that visit their neighborhoods and to instruct them on how to cope with problems that may arise with woodpeckers, blackbirds, and other species.

Treaty (continued from page 2)

Threatened. Similarly, the wildcat addition will assist in conservation of the many smaller cats now in the fur trade. Where implemented, these actions will require export permit documentation for bobcat, lynx, and wolf pelt shipments leaving the United States. (Internal U.S. management practices for these species are not under the jurisdiction of the Convention.)

- Deletion of the glacier bear from Appendix I. This bear was determined not to qualify for the list, because it is only a color form of the black bear (*Ursus americanus*).

Other Major Actions

Among the other major actions decided upon at the conference were the following:

- Passage of a resolution urging that trade in wild animals as pets gradually be restricted, with the objective of eventually limiting pets to those species bred in captivity.
- Recognition of the biological significance and vulnerability of island plants and animals; governments were urged to



Colorado Division of Wildlife Photo

Juvenile white pelicans enroute to form new breeding colony.

protect such rare species and their habitats.

- A decision to treat all nations not party to the Convention as if they did belong, and thereby require the same documentation from them as from signatory nations. This will make law enforcement much easier and will help eliminate the problem of smuggling wildlife to "laundry countries" not requiring permits.

- Adoption of a recommendation that inventories be taken of Endangered plant and animal specimens already in museums and herbaria, so as to reduce demand for additional scientific specimens from the wild.

- Adoption of a recommendation that the Convention secretariat, which is provided by the IUCN, be expanded from its current one-man staff. As implementation of the Convention proceeds, Secretariat responsibilities will grow far beyond present capabilities. The signatory nations explore various ways of funding a larger staff over the next six months.

- Adoption of standardized criteria for adding or deleting species from the appendixes. These criteria should ensure that only species deserving trade regulations are included, while at the same time also ensuring that no species will lose such protection unless it has been clearly shown that the species will not suffer harm from the deletion.

Conference Difficulties

Two major problems arose during the conference. First, many key developing countries were absent. However, this problem is expected to be solved as additional nations ratify the Convention and join in its implementation.

A second problem was the lack of time for consideration of all the complex biological, administrative, and legal issues. Consequently, the conference decided that a technical meeting of key administrators and scientists would be desirable in the spring of 1977. A steering committee consisting of the United States, Canada, Ecuador, Ghana, and Switzerland was set up to coordinate this technical meeting and a subsequent full conference of the parties to be held in 1978.

U.S. Representation in Berne

The U.S. delegation was headed by Deputy Assistant Secretary of the Interior Curtis Bohlen and Fish and Wildlife Service Director Lynn Greenwalt. The delegation also included representatives of the Endangered Species Program and Federal Wildlife Permit Office. Also attending were members of the International Association of Fish and Wildlife Agencies, National Oceanic and Atmospheric Administration, Council on Environmental Quality, Department of State, and New York Zoological Society.

Areas in Palm Beach, Broward, and Dade counties; and a portion of Everglades National Park in Dade County.

These areas are being considered for Critical Habitat status because the kite depends upon apple snails (*Pomacea paludosa*) for food, and the snails, in turn, are dependent upon the maintenance of suitable water levels in the marshes. The areas currently have adequate water levels or have the potential for being managed to provide a maximum snail population.

The world's entire population of dusky sparrows lives in two areas of Brevard County that have been proposed for Critical Habitat status. The sparrows appear to be fully adapted to this habitat, which consists of cordgrass (*Spartina bakerii*) savannas that lie about 10-15 feet above sea level.

Comments on both the kite and the sparrow habitat considerations are due by January 31, 1977.

Totoaba

In a move to protect the totoaba, or MacDonald weakfish (*Cynoscion macdonaldi*), from extinction, the National Marine Fisheries Service has proposed it for Endangered status (F.R. 12/30/76). This marine fish has suffered a severe decline in recent years because of heavy overfishing and deterioration of its only spawning grounds (in Mexican waters at the mouth of the Colorado River).

Comments are due by March 1, 1977. They should be addressed to the Director, National Marine Fisheries Service, U.S. Department of Commerce, Washington, D.C. 20230.

Falcon Hearing Denied

The Fish and Wildlife Service has denied a request by the Pacific Gas and Electric Company for a public hearing on the proposed Critical Habitat determination for the American Peregrine falcon (*Falco peregrinus anatum*).

The company requested the hearing solely on the grounds that potentially such a determination could adversely affect several hundred megawatts of geothermal generating capacity.

In denying the request (F.R. 12/22/76), the service pointed out that a Critical Habitat designation only notifies Federal agencies that they are required to ensure that their activities do not adversely affect an Endangered or Threatened species. Moreover, the Service said, questions concerning what types of activity may be detrimental to a species should be considered after—not before—a Critical Habitat determination has been made, because such questions are not a factor in the actual delineation of Critical Habitat.

Jacobsen Named Management Chief

A key position in the Endangered Species Program's Washington office was filled recently when Bob Jacobsen was named chief of its Branch of Management Operations, following the retirement of Curt Hammit.

As branch chief, Jacobsen will supervise four major activities: negotiation of cooperative agreements with the States

and review of grant-in-aid requests; consultation with Federal and other agencies for Section 7 and Critical Habitat responsibilities; appointment of recovery teams and implementation of recovery plans; and land acquisition recommendations.

High Court Acts to Save Sandhill Crane Habitat

In the first test of the 1973 Endangered Species Act to reach the U.S. Supreme Court, the Mississippi sandhill crane (*Grus canadensis pulla*) has emerged the winner.

On November 30, the High Court upheld a Fifth U.S. Circuit Court of Appeals decision that had stopped construction of an interchange and borrow pits on Interstate Highway 10 near the birds' home territory in Jackson County, Miss.

This area contains the last 40 of the nonmigratory birds. The National Wildlife Federation had brought the suit to block construction on grounds that it would create commercial development that would destroy the cranes' habitat and jeopardize their survival.

The appeals court directed the Department of Transportation and the Department of the Interior to work out a joint plan for completing the highway. As of January 1977, no final agreement had been reached by the agencies. However, the Fish and Wildlife Service already has acquired 2,300 acres of habitat, including areas adjacent to the highway right-of-way, as a crane refuge.

Grizzly (continued from page 4)

development may have to be controlled to restrict unauthorized access to good grizzly habitat.

Wildlife managers responsible for grizzly conservation hope the research efforts now underway will greatly enhance the understanding of the bear's needs and ease future decisionmaking. On the other hand, they are aware that there also is a danger in relying on promises of better data in the future, if it leads to a total suspension of conservation efforts. There may be some hard decisions which cannot or should not be postponed.

New Publication Available on Alabama

The Alabama Museum of Natural History has recently published a bulletin entitled *Endangered and Threatened Plants of Alabama*. This 93-page illustrated report contains the results of a 1972 symposium sponsored by the Alabama Game and Fish Division and the University of Alabama. It is available for \$5 from the Alabama Museum of Natural History, P.O. Box 5897, University, Alabama 35486.

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	36	227	263	1	17	18
Birds	66	144	210	1		1
Reptiles	8	46	54	1		1
Amphibians	4	9	13			
Fishes	30	10	40	4		4
Snails		1	1			
Clams	22	2	24			
Crustaceans						
Insects	6		6	2		2
Plants						
Total	172	439	611	9	17	26

Number of species currently proposed: 47 animals
1850 plants (approx.)

Number of Critical Habitats proposed: 10

Number of Critical Habitats listed: 6

Number of Recovery Teams appointed: 57

Number of Recovery Plans approved: 4

Number of Cooperative Agreements signed with States: 15

December 31, 1976

Rulemaking Actions November-December 1976

Final Rulemakings

Yellow-Shouldered Blackbird

The yellow-shouldered blackbird (*Agelaius xanthomus*) has been listed as Endangered and areas of its native Puerto Rico have been designated as Critical Habitat (F.R. 11/19/76).

Once abundant throughout coastal mangroves, the species has gone into decline because of parasitism by the shiny cowbird (*Molothrus bonariensis*), avian diseases, and destruction of its habitat. It now numbers only 2,500.

Areas listed as Critical Habitat include Puerto Rico's southwestern coast from Cabo Rojo to Guanica, a one-mile circle around the town of San German, Roosevelt Roads Naval Station, and Mona Island (off the western coast).

Hawaiian Monk Seal

In order to afford greater protection for the nearly extinct Hawaiian monk seal (*Monachus schauinslandi*), the species has been listed as Endangered in a joint rulemaking by the National Marine Fisheries Service and the Fish and Wildlife Service (F.R. 11/23/76).

The seal has declined because of intrusion on its beach rookeries by people and dogs, which has curtailed breeding, as well as because sharks have decimated weaned seal pups. The species is known to breed only on the islands of the Hawaiian Islands National Wildlife Refuge, which is administered by the Fish and Wildlife Service. Since the area already is a refuge, no Critical Habitat was designated in the final rulemaking. However, all dogs have

been removed from Kure Atoll, one of the breeding grounds, since the listing was proposed in August 1976.

Red Hills Salamander

The Red Hills salamander (*Phaeognathus hubrichti*), which ranges over 60,000 acres of hardwood forest in south-central Alabama, has been listed as Threatened (F.R. 12/3/76). The dark-brown, seven-inch-long amphibian had been proposed for Endangered status on October 1, 1975, because its numbers appeared to be declining as a

result of timber clear-cutting and the over-collecting of specimens for commercial and scientific purposes.

New information assembled in a 1976 study for the Service, however, shows that certain areas inhabited by the salamander—bluffs and steep ravines shaded by tree canopy—are being "marked out" by timber companies, leaving most of the habitat intact. The Service has determined that, while the new data indicate a less severe threat to the salamander than was originally believed, the situation is still serious enough to warrant Threatened status.

Proposed Rulemakings

Palila

Forests of mamane and naio trees around Mauna Kea on the island of Hawaii have been proposed as Critical Habitat for the Endangered palila (*Psittirostra bairdii*), a small bird that is classified within the Hawaiian honeycreeper family (F.R. 12/22/76).

The bird is dependent upon these trees for food, shelter, and nesting sites, and it cannot survive in any other natural environment. At one time, the bird ranged across the slopes of Mauna Kea from the 4,000-foot level to the 10,000-foot level. Now it is confined to a relatively small area above the 7,000-foot mark, as a result of the destruction of much of its habitat by agriculture, feral sheep grazing, and forest clearing.

Comments are due by April 18, 1977.

Florida Everglade Kite Dusky Seaside Sparrow.

Sections of Florida have been proposed for determination as Critical Habitat for the Florida Everglade kite (*Rostrhamus sociabilis plumbeus*) and the dusky seaside sparrow (*Ammospiza maritima nigrescens*) in a Service rulemaking action (F.R. 12/3/76).

Proposed as Critical Habitat for the kite are marshlands in seven counties. These areas include the St. Johns Reservoir in Indian River County; Cloud Lake and Strazzulla reservoirs in St. Lucie County; western portions of Lake Okeechobee in Glades and Hendry counties; Loxahatchee National Wildlife Refuge in Palm Beach County; portions of Central and Southern Florida Flood Control District Water Conservation

(continued on page 7)

December 1976—January 1977 Vol. II, No. 1



ENDANGERED SPECIES TECHNICAL BULLETIN



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

Appellate Court Prohibits Tellico Dam Closing; ES Legal Protections Defined

The U.S. Court of Appeals for the Sixth District has permanently enjoined the Tennessee Valley Authority (TVA) from closing the Tellico Dam and creating a reservoir that would destroy the Critical Habitat of the Endangered snail darter (*Percina tanasi*).

Unless the U.S. Supreme Court overturns this decision or Congress specifically exempts the project from the Endangered Species Act's coverage, the appellate court's ruling will have the effect of preserving the Little Tennessee river valley ecosystem, which also includes other Endangered species (see accompanying story).

Other Federal dams now underway also could be affected, because the court held that the law can be applied to protect Endangered species regardless of when a project was started or how near to completion it may be.

TVA in Violation

The unanimous decision handed down January 31 by the three-judge court found that the TVA was in violation

of the law in having proceeded to complete the Tellico Dam after the snail darter had been listed as Endangered in 1975 and a 17-mile-long stretch of the river above the dam had been designated as Critical Habitat on April 1, 1976.

In ordering that a permanent injunction be issued to halt closure of the nearly completed dam, the court of appeals said the U.S. District Court for Eastern Tennessee "abused its discretion when it refused to enjoin a clear violation of law." This was in reference to the district court's decision in May 1976 to allow construction to proceed after concluding that "it is highly probable that closure of the Tellico Dam and the consequent impoundment of the river behind it will jeopardize the continued existence of the snail darter." The TVA had argued that completion of the dam was outside the jurisdiction of the law in that the project had been started six years before the snail darter had been discovered in the river. The agency contended that, in continuing to fund the project, Congress had sanctioned its

(continued on page 2)



Fish and Wildlife Service Photo by Hans Stuart

Spiny River Snail is proposed as Endangered, Critical Habitat listed

41 Taxa of Snails, Fish Crustaceans Proposed

The importance of preserving river ecosystems is emphasized in a proposed rulemaking aimed at listing 41 taxa of snails, fish, and crustaceans as either Endangered or Threatened (F.R. 1/12/77). Comments are due by April 12, 1977.

Freshwater Snails

Four species of freshwater snails would be jeopardized by the construction of dams on the Little Tennessee and Duck rivers in Tennessee.

Anthony's river snail (*Athearnia anthonyi*), discovered in 1854 but long since thought to be extinct, has been found surviving in the Nolichucky, Little Tennessee, and Tellico rivers.

(continued on page 5)

Section 7

Formal Consultation Steps Are Set Forth

A recently proposed rulemaking would establish a formal biological consultation process to help Federal agencies comply with section 7 of the Endangered Species Act of 1973 (F.R. 1/26/77).

The proposal includes four major sets of recommendations:

1. Time frames for the rendering of

(continued on page 6)



Photo by Sam Venable

Snail Darter Critical Habitat at Coytee Springs on the Little Tennessee

completion, and that, if halted, the project would mean a loss to the taxpayers of more than \$100 million in construction costs.

Conduct of Secretary Upheld

The court of appeals dismissed these arguments and upheld the conduct of the Secretary of the Interior in the case as "both reasonable and consistent" with the law. The court noted that the Secretary, who acts through the Fish and Wildlife Service, occupies a pivotal role in trying to achieve voluntary compliance with the law by other Federal agencies through consultation and issuance of biological standards for preserving species.

Noting further that the Secretary lacks the veto power to force compliance with his standards, the court said, "We see positive benefit to be gained by impressing [the Secretary's] criteria with a judicial imprimatur. This will expedite the adjudication of future cases as well as assist the Secretary in achieving a uniform Federal conservation posture with minimal reliance upon the courts."

On the issue of the law's applicability throughout the life of a project, the court said that detrimental ecological effects may not be clearly perceived before construction is well underway. The court declared: "Were we to deem the extent of

project completion relevant in determining the coverage of the Act, we would effectively defeat responsible review in those cases in which the alternatives are most sharply drawn and the required analysis most complex."

What Is A Unique Life Form Worth?

Moreover, the court of appeals said it was the responsibility of the executive and legislative branches—not the courts—to "grapple with the alternatives." As the court noted, "Whether a dam is 50% or 90% completed is irrelevant in calculating the social and scientific costs attributable to the disappearance of a unique form of life. Courts are ill-equipped to calculate how many dollars must be invested before the value of a dam exceeds that of the endangered species."

In discussing the TVA's obligation to comply with the act, the appellate court said the actions of two Congressional appropriations subcommittees in funding Tellico Dam did not constitute "legislative acquiescence in or express ratification of the TVA's *laissez faire* interpretation of the Act." The court then cited House Rule XXI, which says "no appropriation shall be reported in any general appropriation bill. . . . Nor shall any provision in any such bill or amendment thereto changing existing law be in order. . . ."

In response to the TVA's effort to transplant snail darters to the Hiwassee River, the court said it could not alter its decision to stop the closure of Tellico Dam even if it had evidence the transplanted population was thriving and reproducing. The reason: "It is not the courts but the Secretary of the Interior who bears the responsibility for maintaining the endangered species list and the designating of critical habitat of listed species. . . . Nowhere in the Act are courts authorized to override the Secretary by arbitrarily 'reading' species out of the endangered list or by redefining the boundaries of existing critical habitats on a case-by-case basis."

Call For Public Hearings

The injunction is to remain in effect until Congress exempts the Tellico Dam from compliance with the law, or the snail darter is deleted from the Endangered list or its Critical Habitat is materially redefined, the court said.

Shortly after the decision was rendered, the question of an exemption for Tellico Dam was taken up by the staff of the U.S. Senate Committee on Public Works.

Meanwhile, Zygmunt Plater, a Wayne State University law professor and one of five plaintiffs who initially brought suit against the TVA, has urged Congress to hold fact-finding hearings on any exemption legislation.

Plater and other conservationists point out that the snail darter lives in the only remaining free-flowing section of the Little Tennessee—a section offering unique recreational opportunities for residents of the area. The rest of the river system in eastern Tennessee is ponded by 27 other dams. "Like the fish," Plater says, "This stretch of river valley is the last of its kind."

U.S. Fish and Wildlife Service Washington, D.C. 20240

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Spinks Named New Chief of ES Office

John Spinks, 34, has been appoint-
ed chief of the Office of Endangered
Species, assuming administrative
responsibilities under Program Man-
ager Keith M. Schreiner.

Since 1974, Spinks has been spe-
cial assistant to the assistant secre-
tary of the Interior for Fish and
Wildlife and Parks. Previously, he was
field director for the Wildlife Society
in Washington, D.C. Spinks also has
worked for the National Audubon
Society in Austin, Texas, and for the
South Carolina Wildlife Resources
Department. He holds a degree in
wildlife sciences from Texas A&M.

Spinks succeeds Ronald O. Skoog,
who left the Service last year to
become chief of the Division of
Habitat Preservation in the Alaska
Department of Fish and Game.

Most Alligators Reclassified to Threatened Status

In a final rulemaking, the Service has determined that populations of the American alligator (*Alligator mississippiensis*) throughout Florida and in coastal areas of South Carolina, Georgia, Louisiana, and Texas have recovered sufficiently through conservation efforts over the past decade to warrant reclassification from Endangered to Threatened status (F.R. 1/10/77).

The action, effective as of February 7, 1977, affects at least 570,000 alligators, or approximately 75 percent of the Nation's total number of alligators, conservatively estimated at 734,384.

Alligators that make up the remaining 25 percent remain classed as Endangered. These smaller populations inhabit Alabama, Mississippi, North Carolina, and Oklahoma, and inland portions of South Carolina, Georgia, Louisiana, and Texas.

Comments Received

A total of 32 comments were received by the Service following publication of the proposed rulemaking (F.R. 4/8/76) on reclassification of the alligator. Comments from the States of North Carolina, South Carolina, Florida, Louisiana, Arkansas, and Oklahoma, and the U.S. Forest Service, endorsed the proposal. Six conservation organizations, among them the Defenders of Wildlife and the Fund For Animals, opposed any reclassification. The Florida Audubon Society and three other commenters supported reclassification in some parts of the species' range, but opposed the "wholesale" change in status in Florida.

Final Rulemaking

The final rulemaking was identical to the proposal, except for a slight revision in the boundary between Threatened and Endangered alligators in the western part of Louisiana, as requested by the State.

(Under a 1975 ruling, alligators in the Louisiana parishes of Vermillion, Cameron, and Calcasieu were accorded a unique status. The populations are neither Endangered nor Threatened, but are treated as Threatened because of their similarity of appearance to other Endangered alligators. This allows the State to conduct strictly regulated commercial hunting in the three parishes. Hides must be properly tagged as to their origin before they can be sold.)

No commercial hunting is permitted, however, of the alligators newly classed as Threatened. Nevertheless, special rules do allow anyone to take an alligator



Fish and Wildlife Service Photo by Luther Goldman

An American alligator at the Arkansas National Wildlife Refuge in Texas

without a permit in defense of human life. Designated State or Federal agents may kill sick, orphaned, or problem animals if live capture is not possible. States operating under cooperative State agreements with the Service may take alligators for scientific research or conservation programs.

The Service, in the rulemaking, agreed to a one-year comparative study for controlling nuisance alligators in Florida. The Florida Fish and Game Commission will compare three different methods of control in limited areas: (1) licensed agents using lethal control, (2) regular State employees using lethal control, and (3) State reservists using transplantation only without legal control. The Service hopes that results of this experiment will be of value to wildlife managers throughout the Southeast.

Southern Sea Otter

The population of 1,000 to 2,000 southern sea otters (*Enhydra lutris*) along the northern California

coast has been listed as Threatened (F.R. 1/14/77).

Originally, the otter was proposed for Endangered status, along with 215 other taxa, in a request submitted by the Fund for Animals (F.R. 9/26/75). But this species was omitted from the final rulemaking (F.R. 6/14/76) to permit more time for the Service to analyze data filed by the State of California and conservation groups.

The otter was hunted for its thick pelt to near extinction in California waters 60 years ago. Only about 50 remained in 1914. But the species has made a substantial comeback near Big Sur, Calif., and has been protected from hunting under the Marine Mammal Protection Act since 1972.

Although the otter is vulnerable to oil spills (there are major oil terminals at the northern and southern edges of its range), the Service has determined that there is no known immediate problem that could wipe out the entire population. Therefore, an Endangered classification is not warranted at this time.

(continued on page 4)

Rulemakings

(continued from page 3)

St. Croix Ground Lizard

The Service has proposed listing the St. Croix ground lizard (*Ameiva polops*) as Endangered and establishing Critical Habitat on two small cays in the U.S. Virgin Islands (F.R. 1/10/77). Comments are due by April 8, 1977.

Once prevalent on the island of St. Croix, the lizard apparently was extirpated by the Indian mongoose, which was introduced there in 1884. The last individuals were reported from Frederiksted in 1968. Small populations of the lizard remain on Green and Protestant cays, which have been proposed as Critical Habitat.

Giant Anole

Endangered status and Critical Habitat designation have been proposed for the giant anole (*Anolis roosevelti*), a rarely seen 10-inch lizard endemic to Culebra Island, a part of the Commonwealth of Puerto Rico lying about 20 miles east of the island of Puerto Rico (F.R. 1/10/77). Comments are due by April 7, 1977.

The lizard, first described in 1931, is believed to survive in the dense forest on the slopes of Mt. Resaca. This habitat is now threatened with destruction by the removal of fan-leaved palms, which provide a canopy for the lizard. The proposed Critical Habitat would include a circular area of land 1.4 kilometers in radius, with the summit of the mountain at the center.

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	36	227	263	2	17	19
Birds	66	144	210	1		1
Reptiles	8	46	54	1		1
Amphibians	4	9	13	1		1
Fishes	30	10	40	4		4
Snails		1	1			
Clams	22	2	24			
Crustaceans						
Insects	6		6	2		2
Plants						
Total	172	439	611	11	17	28

Number of species currently proposed: 90 animals
1850 plants (approx.)

Number of Critical Habitats proposed: 30

Number of Critical Habitats listed: 6

Number of Recovery Teams appointed: 57

Number of Recovery Plans approved: 8

Number of Cooperative Agreements signed with States: 17

January 31, 1977

Reference Note

All Service notices and proposed and final rulemakings are published in the *Federal Register* in full detail. The parenthetical references—i.e., (F.R. 2/14/77)—given in the BULLETIN list the month, day, and year the rulemaking appeared in the *Federal Register*.

We Need Your Help

To make this *your* BULLETIN, as well as ours, we need your help. Please send the Editor your suggestions for improving the format; ideas for articles; photographs; and reports on your latest research and management activities.



Fish and Wildlife Service Photo by Karl Kenyon

The Southern Sea Otter has made a sufficient comeback from near extinction to be listed as Threatened

It is threatened by construction of the Tellico Dam, on the Little Tennessee River, as is the previously listed Endangered snail darter (*Percina tanasi*). Closure of the nearly finished dam has been prohibited by court order (see accompanying story). Anthony's river snail also is proposed for Threatened status because of pollution in the Nolichucky River.

Columbia Dam, being built on the Duck River, would eliminate half of the total population of Dutton's river snail (*Io armigera duttoniana*), the small-stream form of *Io armigera*. Recent completion of Normandy Dam, upstream on the Duck River, has rendered the uppermost population effectively extinct. Downstream effects of these two Tennessee Valley Authority projects may eliminate the remaining populations of this subspecies, which is restricted to the Duck River. Consequently, this snail is proposed as Threatened.

Two more snail species restricted to the Duck River also would be adversely affected by the dams. The geniculate river snail (*Io geniculata geniculata*), proposed as Threatened, could suffer a 66 percent decline in population, including a 33 percent loss because of water pollution. The habitat of the rugged river snail (*Io salebrosa*), proposed as Endangered, would be inundated by the Columbia Dam's reservoir. Ten other species already listed or in the process of being proposed are also threatened by this project.

Florida Tree Snail

Endangered status is proposed for the Florida tree snail (*Liguus fasciatus*) populations on the Florida Keys and on Cape Sable. The remaining populations, occurring in greater numbers over the rest of Florida, are proposed as Threatened.

A total of 8 of the 52 known forms of *Liguus fasciatus* are considered extinct and 31 additional forms are jeopardized. Tree snails have been victimized by land clearing, hurricanes, fogging for mosquito control, jetport construction, predation, and over-collecting. Shells bring high prices, with rare specimens commanding \$50 or more; one family is known to have collected over 10,000 shells.

First Brackish-Water Snails

The proposal includes the first listings of brackish-water snails. The California brackish water snail (*Tryonia imitator*), formerly found along the coast from Bodega Bay to San Diego, is in danger of becoming extinct because of the elimination of true brackish-water habitat by road construction and other factors. It is proposed as Endangered.

Half-burned sawdust from saw mills is blanketing the brackish-water habitat in Humboldt Bay, Calif., of Newcomb's

PROPOSED TAXA OF SNAILS, FISH, CRUSTACEANS

Common Name	Scientific Name	Distribution	Listed Status
Snails			
Armigerous river snail	<i>Io armigera armigera</i>	Kentucky	E, C.H.
Crass river snail	<i>Athearnia crassa</i>	Georgia, Tennessee	T
Rugged river snail	<i>Io salebrosa</i>	Tennessee	E, C.H.
Dutton's river snail	<i>Io armigera duttoniana</i>	Tennessee	T, C.H.
Elk River file snail	<i>Io verrucosa lima</i>	Tennessee, Alabama	T, C.H.
Geniculate river snail	<i>Io geniculata geniculata</i>	Tennessee	T, C.H.
Indiana river snail	<i>Goniobasis semicarinata indianensis</i>	Indiana	T, C.H.
Jay's river snail	<i>Io armigera jayana</i>	Tennessee	E, C.H.
Mainstream river snail	<i>Leptoxis praerosa</i>	Tennessee	E, C.H.
Small geniculate river snail	<i>Io geniculata penguia</i>	Tennessee	T, C.H.
Spiny river snail	<i>Io fluvialis</i>	Tennessee, Virginia	E, C.H.
Anthony's river snail	<i>Athearnia anthonyi</i>	Tennessee	T
Umbilicate river snail	<i>Leptoxis subglobosa umbilicata</i>	Tennessee	T, C.H.
Verucose river snail	<i>Io verrucose verrucosa</i>	Tennessee	E, C.H.
California brackish water snail	<i>Tryonia imitator</i>	California	E
Cape Mendocino snail	<i>Helminthoglypia arrosa matolensis</i>	California	T
Concentrated snail	<i>Micrarionta facta</i>	California	E
Florida tree snail	<i>Liguus fasciatus</i>	Florida	E, T
Newcomb's littorine snail	<i>Algamorda newcombiana</i>	Calif., Ore., Wash.	T
Prickly pear snail	<i>Micrarionta opuntia</i>	California	T
Fish			
Alabama cave fish	<i>Speoplatyrhinus poulsoni</i>	Alabama	T, C.H.
Slender chub	<i>Hybopsis caini</i>	Tennessee	T, C.H.
Spotfin chub	<i>Hybopsis monacha</i>	Va., Tenn., N.C.	T, C.H.
Slackwater darter	<i>Etheostoma boschungii</i>	Ala., Tenn.	T, C.H.
Yellowfin Madtom	<i>Noturus flavipinnis</i>	Tenn., Va.	T, C.H.
Crustaceans			
Big South Fork crayfish	<i>Cambarus bouchardi</i>	Tennessee, Kentucky	T
Chickamauga crayfish	<i>Cambarus extraneus</i>	Georgia, Tennessee	T
Couhas crayfish	<i>Orconectes deanae</i>	New Mexico	T
Louisville crayfish	<i>Orconectes jeffersoni</i>	Kentucky	E
Nashville crayfish	<i>Orconectes showpi</i>	Tennessee	E
Obey crayfish	<i>Cambarus obevensis</i>	Tennessee	T
Palm Springs cave crayfish	<i>Procambarus acherontis</i>	Florida	T
Placid crayfish	<i>Pacifastacus fortis</i>	California	T
Madison Cave Isopod	<i>Antrolana lira</i>	Virginia	E
Florida cave scud	<i>Crangonyx grandimanus</i>	Florida	T
Hay's Spring scud	<i>Stygionectes hayi</i>	District of Columbia	E
Alabama cave shrimp	<i>Palaemonias alabamiae</i>	Alabama	T
California freshwater shrimp	<i>Syncaris pacifica</i>	California	T, C.H.
Kentucky cave shrimp	<i>Palaemonias ganteri</i>	Kentucky	T
Squirrel chimney cave shrimp	<i>Palaemonetes cummingsi</i>	Florida	T

littorine snail (*Algamorda newcombiana*). Small colonies of this snail, proposed as Threatened, also survive in Coos Bay, Ore., and Grays Harbor, Wash.

First Crustaceans

The proposed rulemaking lists crustaceans for the first time. Among the four proposed as Endangered is the Madison Cave isopod (*Antrolana lira*), in Augusta County, Va. A marine-like relic of the Paleozoic era and the only species in its

genus, this important species is endangered by heavy human visitation to the historic cave.

A single spring at the National Zoological Park, Washington, D.C., contains the only known remaining population of Hay's Spring scud (*Stygionectes hayi*), a blind white crustacean. It is proposed as Endangered because of ground water pollution.

Critical Habitat was proposed for 18 of the taxa. The remaining species in the proposed rulemaking are included in the accompanying table.

biological opinions by the Fish and Wildlife Service and the National Marine Fisheries Service (NMFS) of the U.S. Department of Commerce.

2. Procedures to be followed in the consultation process.

3. Guidelines for ascertaining when projects are exempt from the consultation process.

4. Definitions of key terms used in section 7 of the act.

Comments are invited from the public and Federal agencies. They should be submitted to the Service by March 28, 1977.

Allocation of Responsibility

One of the key aspects of the proposed rulemaking is the allocation of agency responsibility. The proposal takes a position affirming that it is "the ultimate responsibility of each agency to decide whether or not it is in compliance" with the law.

Under section 7, Federal agencies sponsoring or undertaking projects that may affect Endangered or Threatened species must "insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence" of such species or "result in the destruction or adverse modification" of their Critical Habitat. The section requires Federal agencies to proceed "in consultation with, and with the assistance of" the Service and NMFS.

Initiation of Consultation

The proposed regulations specify that it would be the responsibility of Federal agencies to initiate the consultation

process after they have reviewed and identified any of their actions that may affect listed species. If the review indicates no such effect, consultation would not be required unless requested by the Service or NMFS. If potential effects are indicated, then the Federal Agency should make a written request for a consultation. Consultation also could be requested by the Services or NMFS if they become aware of Federal actions that may affect listed species.

Threshold Examination

Once a consultation has been requested, the Service or NMFS would conduct a "threshold examination," or preliminary assessment of potential effects. Agencies would receive notification of the resultant findings within 60 days. In cases where adverse effects are found, a final biological opinion would be rendered in another 60 days, unless more time is needed to gather the necessary data. The amount of extra time needed would be negotiated with the Federal agency. All biological opinions and recommendations would be accompanied by supporting documentation.

When the final biological opinion of the Service or NMFS is in hand, the affected agency has the responsibility of determining "whether and how to proceed in light of its section 7 obligations."

Application of Section 7

The proposed rulemaking recommends as policy that the Service and NMFS do not intend section 7 to bring about the waste that can occur if a project is halted at an advanced stage. Accordingly, application of section 7 would be limited to cases "where Federal

involvement or control remains and in itself could jeopardize the continued existence of a listed species." Projects that have had Federal involvement terminated would be exempt.

The Service and NMFS state their belief that their role under section 7 "is limited to providing biological advice and assistance, not in determining if a project may continue." Continuation is the decision of the affected Federal agency.

The proposed rule adopts the position that Critical Habitat may not be determined in foreign countries by the United States. Federal agencies still must abide by the requirement that their actions not jeopardize the continued existence of listed species "wherever occurring."

In defining the terminology of section 7, the proposal includes the following recommendations: "'Critical habitat' means any air, land or water area . . . or any constituent thereof, the loss of which would appreciably decrease the likelihood of the survival and recovery of a listed species or a distinct segment of its population. . . .

"'Destruction or adverse modification' means a direct or indirect alteration of critical habitat which appreciably diminishes the value of that habitat for survival and recovery of a listed species."

Comments Invited

The Service seeks written comments from interested parties on all Notices and Proposed Rulemakings. They should be addressed to: Director (FWS/LE), U.S. Fish and Wildlife Service, P.O. Box 19183, Washington, D.C. 20240.



ENDANGERED SPECIES TECHNICAL BULLETIN



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



Fish and Wildlife Service Photo by Don Reilly

Timber Wolf Reclassification Debated

Management of the eastern timber wolf (*Canis lupus lycaon*) has become a controversial issue in northern Minnesota, the wolf's last stronghold in the Lower 48 States.

Local residents and the Minnesota Department of Natural Resources are urging that the wolf be removed from the list of Endangered species, contending that the wolves are depleting deer herds and ranging into settled areas where they are attacking livestock and household pets. Despite Federal penalties for killing Endangered wildlife, there is an increasing number of reports of wolves being illegally shot and trapped as predators by farmers and hunters.

Some conservation organizations, on the other hand, are opposed to any change in the wolf's status on the grounds that the low numbers of the species in the United States justify continued complete protection. Other conservationists, though, favor a middle course of reclassifying the species to Threatened so that some wolves can be taken in the interests of better management and fostering public tolerance.

Many of the biological issues concerning the future of the wolf have crystallized with publication of a draft recovery plan by the Eastern Timber Wolf Recovery Team appointed by the Fish and Wildlife Service. The team, headed by Ralph E. Bailey of the Michigan Department of Natural Resources, recommends reclassification of the wolf to Threatened status in Minnesota. Its

(continued on page 3)

Wolf Rulemaking Due

Recommendations of the Eastern Timber Wolf Recovery Team do not necessarily represent the official position of the Fish and Wildlife Service. Any final plan is subject to the approval of the director of the Service. As this issue of the BULLETIN goes to press, a proposed rulemaking on the eastern timber wolf is being prepared by the Service for publication in the *Federal Register*. Future issues of the BULLETIN will report on the disposition of this proposal.

ES Treaty Permits Required May 23; Enforcement Starts

The United States will begin enforcing the Convention on International Trade in Endangered Species of Wild Fauna and Flora on May 23, 1977.

As of that date, permits or certificates will be required for international trade in all species listed in appendixes I, II, and III of the Convention. Regulations setting up a system for obtaining permits were published in the February 22, 1977 issue of the *Federal Register*.

(Copies of the regulations are available from the Federal Wildlife Permit Office, U.S. Fish and Wildlife Service, Washington, D.C. 20240.)

A list of all the species protected by the Convention is included with the permit regulations. This list is similar to the list of species protected by the Endangered Species Act of 1973, but is not identical. For example, although Appendix II of the Convention lists all species of orchids, the act does not yet provide protection for plants. Furthermore, listing of more than 1,850 plants under the act is pending, but only a few orchids are included in this group.

General Policies

The regulations establish general U.S. policies for implementing the Convention. Important points include the following:

- Some type of permit or documentation will be required for international trade in all species listed by the Convention, even if the species originates in a country that is not a party to the Convention. Currently, 34 nations are party to the treaty, and the goal is to have as many countries as possible adopt the same set of trade requirements.

- Certificates of origin must be issued for species being reexported. This requirement is intended to prevent the "laundering" of Endangered wildlife and plants through third countries.

(continued on page 2)

Permits (continued from page 1)

• Permits will be needed only for Convention species involved in international trade. Interstate shipments are not affected unless they involve species that also are protected by U.S. law.

• In the case of species protected by both U.S. law and the Convention, a single permit application will be sufficient for both. Application requirements for U.S. Endangered and Threatened species permits generally are stricter than for Convention permits. This procedural simplification also extends to species protected by both the Convention and the U.S. Marine Mammal Protection Act.

Application Approval

Rules have been established for the approval of permit applications. Certain findings must be made by a so-called management authority and a scientific authority in each country before the management authority can issue a permit. In the United States, the management authority is the chief of the Federal Wildlife Permit Office and the scientific authority is a Federal interagency organization created by Executive Order 11911 (1976) and supported by an executive secretary and a staff that

is provided by the Fish and Wildlife Service.

Combined Listing

The Fish and Wildlife Service currently is preparing a new combined list of all species covered by various Federal laws. It is expected to be published later this year.

The Service does not intend to list as Endangered or Threatened every species that is listed by the Convention, because the criteria for adding species to U.S. listings are not the same as those of the Convention. Species will be examined on an individual basis to determine if those listed under one system qualify for the other.

Background

U.S. permit regulations were promulgated following a meeting of treaty nations in Berne, Switzerland, last November to bring about rapid implementation of the treaty. Negotiated in 1973, the treaty is intended to eliminate commercial trade as a cause of the decline in any species.

To date, permit regulations have been drawn up and put into effect by Switzerland, the United Kingdom, Canada, and West Germany.

Treaty Improvements Under Consideration

A number of actions are being considered to improve the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. They pertain to the shipment of living specimens, establishment of animal rescue centers, exchange of marine specimens, identification of specimens, and amendments to the Convention's Appendix I and Appendix II listings.

An agenda of issues was drawn up at a five-nation steering committee session held February 21-22 at Morges, Switzerland. Treaty nations will meet at a special session in October at Geneva to formulate recommendations to be acted upon by the full Convention next year. Richard M. Parsons, chief of the Federal Wildlife Permit Office, represented the United States on the steering committee. Representatives also were present at the meeting from Canada, Ecuador, Ghana, and Switzerland.

Pelican Recovery Team Seeks Assistance

The Eastern Brown Pelican Recovery Team is trying to determine the role played by the persistent and toxic pesticide Endrin in the demise of the brown pelican on the Louisiana-Texas coast during the late 1950's and early 1960's.

The team is aware of some Endrin pollution in the lower Mississippi River during that period, but it has not yet found direct evidence of high Endrin levels in pelicans or their eggs along the Gulf coast in those years.

Having learned recently that it is feasible to analyze museum specimens for Endrin residues, the recovery team currently is attempting to locate brown pelican eggshells and skins that were obtained during the 1957-62 period along the Gulf coast between Dauphin Island, Alabama, and Tampico, Mexico.

Says team leader Lovett E. Williams, Jr.: "Specimens made available to us will not be destroyed. The insides of the eggs will be rinsed with acetone and hexane. With regard to skins, small pieces of skin and muscle will be taken in such a way that the appearance and scientific value of each specimen will not be seriously altered."

He urges anyone with knowledge of such specimens to write to him at the following address: Lovett E. Williams, Jr., Eastern Brown Pelican Recovery Team, Wildlife Research Laboratory, 4005 South Main Street, Gainesville, Florida 32601.

U.S. Fish and Wildlife Service Washington, D.C. 20240

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Debating Biological Needs of the Eastern Timber Wolf

(continued from page 1)

report offers a plan for containing the wolf in its primary and peripheral ranges, plus increasing the availability of wild prey.

Population Estimates

The plan is based upon there being an estimated population of 1,000-to-1,200 wolves in Minnesota (according to a 1975-76 count by L. David Mech of the Fish and Wildlife Service). This estimate indicates that the population may have largely recovered from a 40-percent decline in 1971-72 and that the wolf is in no immediate danger of extinction in that State.

Outside of Minnesota, northwestern Wisconsin and Michigan's upper peninsula are believed to harbor a few individuals, and Isle Royal National Park in Lake Superior has a stable population of about 40. A vast population of eastern timber wolves—perhaps as many as 10,000—survives in the forests of southern Ontario and Quebec.

Management Zones

In the recovery plan, the team has identified five management zones, each coextensive with a portion of the wolf's Minnesota habitat. They are shown on the accompanying map and are described as follows:

- Zones 1 and 2 include parts of Superior National Forest and Boundary Waters Canoe Area. Together, these zones constitute about 4,300 square miles of primary range that contain between 530 and 615 wolves—about half of Minnesota's total wolf population.

- Zone 3, which includes the Beltrami Island Wildlife Management Area, consists of about 3,400 square miles of primary range. Its wolf population is estimated at 205.

- Zone 4 is characterized as a peripheral zone. Covering nearly 21,000 square miles, it is believed to contain between 280 and 410 wolves.

- Zone 5 covers the rest of the State, including the principal areas of human settlement.

Recovery Plan Issues

Major issues addressed in the plan are (1) classification, (2) creation of sanctuaries, (3) control measures, (4) enhancement of the wolf's natural food supply, and (5) reestablishment.

1. Classification Change Questioned: The recovery team's vote was 8-0 to recommend retention of the Endangered classification for Lower 48 wolf populations outside Minnesota. It was 7-1 on recommending a change to Threatened status for the Minnesota

population, with the Minnesota Department of Natural Resources casting the lone dissenting vote. The department says the wolf should be declassified entirely in the State.

The recovery team's rationale for recommending Threatened status is that, while the wolf has survived (despite bounties and year-round hunting and trapping in former times), the future is unpredictable. Says the team:

"For example, widespread industrialization, mineral exploitation, and general development could threaten much of the wolf's remaining range. . . . Additional roads, railroads, power lines, mines, and tourist facilities could further carve up much of northern Minnesota."

But the Minnesota Department of Natural Resources feels that the trend in the northeastern part of the State is "toward more environmental protection, not less." The department points out that much of the wolf's range is public land and protected, thereby ruling out significant changes in land use; if laws are

revised to drastically alter land use, the wolf could then be returned to the appropriate list.

The Defenders of Wildlife and nine other national conservation organizations are opposed to reclassifying the Minnesota wolves as Threatened. They argue that this step "runs counter" to the purpose of the law to "insure to the extent possible, restoration of endangered species to the point where they are no longer endangered or threatened."

But the National Wildlife Federation supports the reclassification, except for the Zone 1 northeastern population, which it suggests could be retained as Endangered. The basis for this recommendation is the recovery team's proposal to allow wolf numbers in Zone 1 to fluctuate naturally.

The Minnesota regional office of the National Audubon Society endorses the change to Threatened because it makes "good sense," but adds that this classification for the wolf should be reviewed every two years.

(continued on page 5)

Proposed Timber Wolf Management Zones in Minnesota



Howard Associates Map

Wolf (continued from page 3)

2. Are Sanctuaries Needed?: Under the recovery plan, Zone 1 would become a wilderness sanctuary where wolf packs could develop a natural social structure and be allowed to vary in numbers without population management. They would be afforded complete protection, with very little, if any, taking of individual animals.

Zones 2 and 3 would become "managed sanctuaries" with the initial objective of increasing the population from the present estimated 1 wolf per 12-17 square miles to 1 wolf per 10 square miles. This would bring the population up to about 530 wolves total for the two zones.

The plan recognizes that, during severe winters, wolves can contribute to the depletion of local deer herds. To keep deer and wolf numbers high, the plan calls for consideration of artificially reducing wolf numbers in the event the deer herd declines below the number required to maintain the 1 per 10 square miles wolf ratio. Populations of wolf-prey would be monitored annually and goals revised if necessary.

The Minnesota Department of Natural Resources is not in favor of the Zone 3 sanctuary, claiming an increase in wolves to 1 per 10 square miles would "greatly intensify depredation of livestock and other domestic animals as well as depress the now stable deer population." Most of the adjacent land is used for livestock raising. The department adds:

"Let us not forget the timber wolf is a large and effective carnivore with a high reproductive capability. If the livelihood

of our northern residents as well as the deer hunting opportunity of many citizens is jeopardized, the attitude of the majority, now cautiously supportive or at least noncommittal, could be pushed into the anti-wolf ranks and 25 years of progress would be lost."

Neither the recovery plan draft nor any of the comments provide data on the actual losses of livestock and other domestic animals to wolves. Nor have any public opinion polls regarding the wolf been made available in connection with this discussion.

3. Control Measures At Issue: In the peripheral Zone 4, the recovery plan would set a goal of 1 wolf per 50 square miles, or approximately 400 wolves. Excess wolves, according to the plan, would be controlled through a legal hunting and trapping harvest. The recovery team estimates that 100 wolves could be harvested in the first year of management. In addition, the team estimates 60 wolves would be taken under a damage control program and another 60 would be killed illegally, for a total annual take of 220 wolves.

The Defenders of Wildlife objects to the sport harvest as being contrary to the Endangered Species Act because the plan does not offer alternative methods of reducing wolf numbers. It requests that the harvest idea be stricken from the plan. Likewise, the conservation organization believes that the damage control program should employ better livestock management, livetrapping, and transplanting techniques instead of relying on the killing of wolves.

Regarding illegal killing, the organization says the plan "in effect encourages"

the practice, and asks how the team arrived at the estimate of 60 and how it would ensure no more than that would be taken illegally.

4. Feeding the Wolves?: White-tailed deer (*Odocoileus virginianus*) are the most important prey of the wolf, along with moose (*Alces alces*) and beaver (*Castor canadensis*). In recent years, deer numbers have declined in northern Minnesota owing to winter severity plus deterioration of habitat caused by forest maturation and succession. There are some indications wolves also have contributed to the decline.

As the number of wolves has rebounded and deer herds have gone down, the possibility has arisen that wolves will increasingly disperse from the primary and peripheral ranges into settled areas and prey upon livestock and domestic animals. This, in turn, could lead to increased public hostility toward the wolf, thereby swaying public opinion against conservation of the species.

Consequently, the recovery team lists as one of its most important recommendations the improvement of deer habitat to increase prey for the wolf. If recommends rejuvenation of mature forests through cutting and/or fire. This practice, while expensive, would also improve habitat for other types of wildlife, game, and non-consumptive recreational uses.

(continued on page 7)

Eastern Timber Wolf (*Canis Lupus Lycaon*)

Adult eastern timber wolves weigh anywhere from 50 to 100 pounds, with males heavier on average than females. Their coats usually are mixed gray fur, but some specimens have been noted that are predominantly black or white.

Most wolves live in family groups or packs consisting of two-to-eight members, although packs of up to twenty members have been reported. Each pack inhabits an area of 50-to-120 square miles or more and tends to be territorial.

Within each pack there is a dominance hierarchy, and usually only the top-ranked male and female breed. Pups are produced in late April or early May. Litters average five pups under good conditions, and some packs may be even more productive.

With one litter of six pups, a wolf pack of two-to-six animals can theoretically double or triple its size annually, allowing wolf populations to build rapidly. A study in Alaska by L. David Mech has demonstrated that at least 50 percent of the wolf population must be taken each year just to maintain the previous density.

The drastic reduction of the eastern timber wolf has occurred mainly as a result of direct eradication accompanying the settlement of the land.

Three other subspecies of wolf that have historically occurred in the Lower 48 States are currently listed as Endangered. The status of the Northern Rocky Mountain wolf (*Canis lupus irremotus*) is uncertain—individuals are seen occasionally in the subspecies' historical range from southern Alberta to Utah and Colorado, but these could be individuals that have escaped or been released from captivity. A remnant population of the Mexican wolf (*C. l. baileyi*) is apparently hanging on in northern Mexico, but the Texas wolf (*C. l. monstrabilis*) is probably extinct. The red wolf (*Canis rufus*) is a distinct species from the southeastern United States that is also on the verge of extinction.

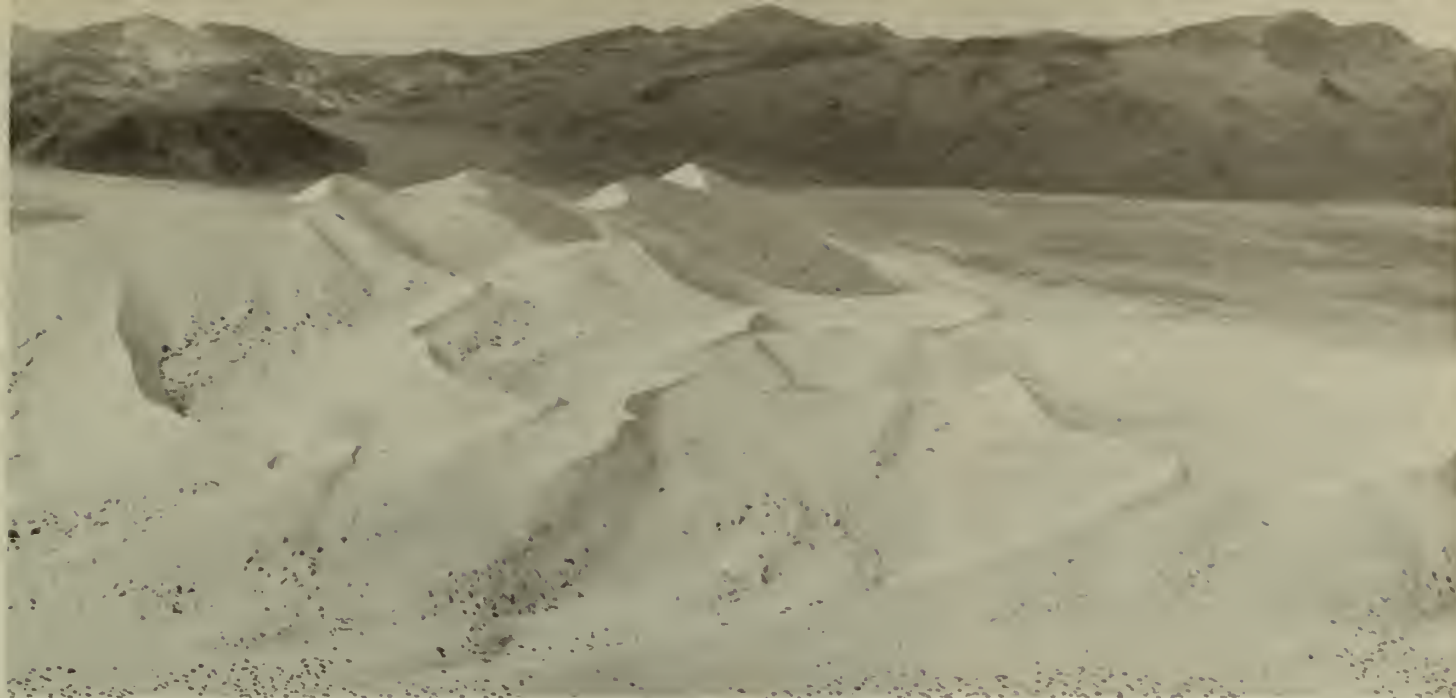
Other subspecies of wolves in Canada and Alaska are faring much better. The 5,000-to-10,000 Alaskan wolves still occupy most of their original habitat and are not considered Endangered or Threatened. In Canada, wolves are also holding their own in most provinces. Only in the Northwest Territories is there a bounty; unlimited taking is permitted in all provinces except Alberta and British Columbia, which regulate the hunting and trapping of wolves.



Fish and Wildlife Service Photo by C. J. Bayer

Reference Note

All Service notices and proposed and final rulemakings are published in the *Federal Register* in full detail. The parenthetical references—i.e., (F.R. 3/14/77)—given in the BULLETIN list the month, day, and year that the rule-making was published in the *Federal Register*.



Bureau of Land Management Aerial Photo

Wind curving off the Last Chance Mountains (in background) has created the Eureka Dunes' unique formation in the California desert. Rainfall and an unusual water table supply

the moisture to support the dune grass, which stabilizes the sand, and other native plants. The off-road vehicle ban is intended to keep dunes from drying up.

Eureka Dunes' Plants Spared by BLM Vehicle Ban

The massively contoured Eureka Sand Dunes, one of California's unique desert ecosystems, are being protected from the further effects of dune buggies by a recent Bureau of Land Management (BLM) vehicle closure order.

Two candidate Endangered species of endemic plants—Eureka dune grass (*Swallenia alexandrae*) and the Eureka evening primrose (*Oenothera avita* ssp. *eurekensis*)—grow on the dunes along with a number of flowering annuals, including the Eureka locoweed (*Astragalus lentiginos* var. *micans*), which is regarded as endangered by the California Native Plant Society.

Recently, four new insects have been discovered in the dunes, which are located on BLM national resource lands in remote Eureka Valley near the northwest corner of Death Valley National Monument. These still undescribed species, as well as others already identified, may eventually be listed as Endangered by the Service.

Enforcement A Problem

The presence of Endangered flora and fauna figured prominently in the BLM decision to close the dunes to off-road vehicles (ORVs) last October. It was the first time the agency has closed such an area to protect Endangered plants; for some time the agency has had policies and guidelines for protecting Endangered wildlife (see box).

The BLM is giving consideration to

designating the dunes as an "outstanding natural area" to encourage more scientific study and protection. Under

BLM Issues ES Policy Manual

The Bureau of Land Management (BLM) has published a new manual containing the agency's internal procedural guidelines for protecting Endangered and Threatened species of wildlife listed by the Federal government and by the States.

The guidelines apply to all programs and actions related to the national resource lands, the Federal subsurface mineral estate, and the submerged lands of the outer continental shelf administered by the BLM. Also covered by the guidelines are the habitats of wildlife considered by States to be extinction-prone and in need of protection or enhancement. The policies do not specifically cover Endangered and Threatened plants.

Included in the 56-page document is a discussion of the methods the BLM is to employ in complying with the Endangered Species Act of 1973 and a statement of the responsibilities of BLM officials in this regard. Copies of *BLM Manual Section 6840—Threatened and Endangered Wildlife* may be obtained by writing to Bureau of Land Management, U.S. Department of the Interior, Washington, D.C. 20240.

the current management plan, the dunes are being kept open to all forms of recreation, except vehicles. Residents report that, since closure, ORVs occasionally have invaded the area and that enforcement of the vehicle ban needs to be improved.

Damage to Slopes

Conservationists have become increasingly concerned about the once-solitary dunes in that the area has grown in popularity since the 1960's as a place to run buggies, motorcycles, and other ORVs. What makes the dunes attractive for ORV sport is their steep slopes. Over the millennia, wind curving off of the Last Chance Mountains has piled sand into an oblong ridge that is three miles long, about a mile wide, and up to 680 feet high.

As ORVs have grown more powerful and able to negotiate the steepest slopes, they have become potentially more damaging. Wheels churning through the sand cut the dune grass rhizomes that enable the grass to spread and stabilize the slopes. With increasing breakage of the surface by wheels, it also was feared the dunes would dry out and lose their plentiful vegetation and the fauna dependent upon it. (The grass affords shelter to the endemic blue-green weevil (*Miloderes nelsoni*), and the grass' large grains are consumed by some of the fauna.)

(continued on page 6)

Dunes (continued from page 3)

The dunes are able to support a large flora despite the arid climate, because they apparently catch enough rainfall from eastward-moving storms. The dunes' structure creates an unusual water table, which allows water to percolate just below the surface.

Another strong argument for banning vehicles is the presence near the base of the dunes of fragile archeological sites containing the artifacts of ancient Indian culture. There is evidence that Indians once irrigated an alluvial plain and maintained some habitations here.

In addition to the Endangered endemics, there is an abundant and varied flora on the dune borders that receive the greatest amount of moisture. An almost pure strand of Indian rice grass (*Oryzopsis hymenoides*), covering some 40 acres, is located on the eastern side.

A Botanist's View

The dunes have been extensively investigated by botanist Mary DeDecker of Independence, Calif., who represented the California Native Plant Society on the BLM committee that inventoried the area for the new land use plan. She reports:

"The showiest flower displays are the fields of desert-mallow (*Sphaeralcea ambigua*) and woolly desert-marigold (*Baileya pleniradiata*). The richly colored fields of desert-mallow are best developed around the northeast corner of the dunes. A walk through them will reveal evening-primroses and a variety of other plants. Far to the south, about midway on the east side of the dunes, may be seen an extensive field of yellow, the woolly desert-marigold. This is well worth a hike to see it.

"*Coldenia plicata*, a small perennial, is common on the lower slopes and bordering sandy flats. Its geometric pattern makes a pretty groundcover, but instead of stabilizing the sand it moves with it. It travels with the wind as far as its long, threadlike foot will allow, anchored by a deeply buried 'capsule'. While many of the dune plants come from the southern deserts, *Chaetadelpia wheeleri* comes from the north and may reach its southerly limit here. Another surprising resident is the least snapdragon (*Antirrhinum kingii*), a dainty annual found among the mallow. Many species are to be expected here, such as the common brown-eyed evening-primrose (*Camissonia claviformis* subsp. *tunerea*), and sand-verbena (*Abronia turbinata*), kidney-leaved buckwheat (*Eriogonum reniforme*), Spanish needle (*Palafoxia linearis*), yellow-flowered spurge (*Euphorbia ocellata* var. *arenicola*), and *Cleome sparsifolia*.

"Allscale (*Atriplex polycarpa*) is the dominant shrub over much of the area bordering the dunes, while creosote bush (*Larrea tridentata*) descends the



Photo by Mary DeDecker

Importance of the Eureka Dune grass to the dunes' ecology has made it a candidate Endangered species.



Photo by Mary DeDecker

Eureka evening primrose, another Endangered candidate, is one of the dunes' showiest flowers.

fans to meet it. Dotted dalea (*Dalea polyadenia*) is common with an occasional Fremont dalea (*Dalea fremontii*). The form of the prince's plume found here (*Stanleya pinnata* subsp. *inyensis*) is a distinct shrub. Its type locality is the north end of the dunes."

Background

The Eureka Dunes were designated a special design area in 1973 to evaluate the impacts of off-road vehicle use and

to develop a management plan. The committee to study the area was formed in 1974. In January 1976, the BLM issued a proposed land use plan that would have allowed ORVs to use the high ridge part of the dunes and close the remainder. This plan was opposed by conservationists and members of the California Congressional delegation. The BLM subsequently issued another environmental report, which recommended total closure of the dunes to vehicles.

Rulemakings

(continued from page 3)

seemingly tame and tolerant of brief disturbances, it eventually abandoned its habitat as fishing and other human activities increased.

In May 1973, Karl W. Kenyon conducted an extensive survey of the species' former habitat for the U.S. Department of the Interior. Although he failed to find any survivors, he did document the existence of the Guadalupe fur seal (*Arctocephalus townsendi*) and the Juan Fernandez fur seal (*Arctocephalus philippi*). All three species hitherto had been considered as probably extinct. Consequently, it is at least possible that the Caribbean monk seal also survives.

Comments are due by April 18, 1977. They should be addressed to the Director, National Marine Fisheries Service, U.S. Department of Commerce, Washington, D.C. 20235.

**Connecticut Listings
Now Available**

The Connecticut Department of Environmental Protection has published a report entitled *Rare and Endangered Species of Connecticut and Their Habitats*. Prepared by Joseph J. Dowhan and Robert J. Craig, the report includes a comprehensive, annotated listing of the State's rare, threatened, and endangered species. In addition, it identifies the habitats and ecoregions that support these species.

The species listed include 275 higher plants, 7 fish, 8 reptiles, 5 amphibians, 50 birds, and 11 mammals.

The 137-page publication has been prepared as Connecticut Geological and Natural History Survey Report of Investigations No. 6. It is available for \$1 postpaid (Connecticut residents: \$1.07, including sales tax) from Sales and Publications, Connecticut State Library, Hartford, Connecticut 06115.

Florida Biota

The Florida Audubon Society has recently prepared a report entitled "Inventory of Rare and Endangered Biota of Florida." The accounts of individual species in this document were written by members of the Florida Committee on Rare and Endangered Plants and Animals, under the chairmanship of Dr. James Layne.

The 1,152-page report is scheduled to be published in paperbound form. In the meantime, an interim microfiche version is available for \$5 from the Florida Audubon Society, P.O. Drawer 7, Maitland, Florida 32751.

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	36	227	263	2	17	19
Birds	66	144	210	1		1
Reptiles	8	46	54	1		1
Amphibians	4	9	13	1		1
Fishes	30	10	40	4		4
Snails		1	1			
Clams	22	2	24			
Crustaceans						
Insects	6		6	2		2
Plants						
Total	172	439	611	11	17	28

Number of species currently proposed: 91 animals
1850 plants (approx.)

Number of Critical Habitats proposed: 38
Number of Critical Habitats listed: 6
Number of Recovery Teams appointed: 57
Number of Recovery Plans approved: 8
Number of Cooperative Agreements signed with States: 17

February 28, 1977

Wolf (continued from page 4)

Under extreme circumstances, such as a series of severe winters, the team says, "it may be biologically sound to temporarily reduce or prohibit harvesting of various prey species." This would benefit future game harvests as well as the wolf.

Unfortunately, this proposal has been misconstrued in the press as a plan to "close the deer season to feed the wolves."

The Minnesota Department of Natural Resources says the recovery plan should spell out that closure of the deer season would be considered "only if a habitat program and a timber wolf reduction program, for some unforeseen reason, should fail." Such closure would be considered only on the basis of the deer population itself, says the department, and would be a State decision.

The recovery team recommends possible reintroduction of the woodland caribou (*Rangifer tarandus*) as an alternative wolf prey species. Caribou last inhabited the State in 1937, but a large amount of bog habitat favored by the species remains in northern areas, making reintroduction appear feasible.

Durward L. Allen, professor of wildlife ecology at Purdue University, is skeptical of both the habitat rejuvenation and caribou proposals. He says that "it is an open question whether cutting and burning can be carried out with available funds and without great opposition from the people who regard these as great intrusions into an important recreation area."

Professor Allen adds:

"The climax forest is potential caribou range, but the deer and the wolf need early successions in which to survive. I doubt that the proposed introduction of caribou has much pertinence to the needs of the wolf, or that it can be successful under conditions favoring the wolf."

5. Wolf Reestablishment?: The recovery team recommends a cautious examination of problems inherent in reestablishing the timber wolf in other areas of its former range, such as northern Michigan and Wisconsin. Research is suggested to select areas that may be ecologically and socially receptive, and to investigate the feasibility of transplants through use of packs and nonrelated wolves.

But the team concedes any such reintroduction is bound to be controversial, both from the standpoint of transplanting wolves and controlling them later. Research very well could reveal that reestablishment of the wolf in other areas is not "prudent," the team says, but the concept should be explored nonetheless in the long-term biological interest of the wolf.

Development of a Final Plan

Discussion of the draft version of the recovery plan, together with additional comments, will provide the basis for development of a final plan and subsequent action by the Fish and Wildlife Service.

Rulemaking Actions February 1977

Critical Habitat for Six California Butterflies

To protect remaining populations of six species of butterflies, several areas of coastal California have been proposed by the Service for listing as Critical Habitat (F.R. 2/8/77).

All six species have been listed as Endangered since 1976 (see July 1976 issue of BULLETIN). They inhabit coastal areas that are being encroached on by economic and residential development. Critical Habitat determination is considered essential to the species' survival, which depends on the maintenance of sufficiently large areas containing their caterpillar-stage food plants and adult-stage nectar plants.

The species and areas are as follows:

1. Lotis blue butterfly (*Lycaeides argyrognomon lotis*): Area in Mendocino County near Pine Grove.

2. Lange's metalmark butterfly (*Apodemia mormo langei*): Area along the San Joaquin River in Contra Costa County.

3. San Bruno elfin butterfly (*Callophrys mossii bayensis*): Portion of San Bruno Mountains, in San Mateo County.

4. Mission blue butterfly (*Icaricia icarioides missionensis*): Twin Peaks zone in San Francisco County, plus a large portion of the San Bruno Mountains, in San Mateo County.

5. Smith's blue butterfly (*Shijimiaeoides enoptes smithi*): Elongate strip of coastal sand dunes along shore of Monterey Bay between Del Rey Creek and the Salinas River, in Monterey County.

6. El Segundo blue butterfly (*Shijimiaeoides battoides allyni*): Area in Los Angeles County on the western undeveloped portion of Los Angeles International Airport, and a two-acre area of natural sand dunes adjoining El Segundo Boulevard (also in Los Angeles County).

In proposing Critical Habitat status for these areas, the Service emphasizes that additional areas may be proposed for listing in the future.

Comments on this proposed rulemaking are due by April 8, 1977.

Service Proposes Critical Habitat for Two Plants

An area along the San Joaquin River in Contra Costa County, California, has been proposed for listing as Critical Habitat for two plants that live in the same habitat as the Endangered Lange's metalmark butterfly (F.R. 2/8/77).

The Contra Costa wallflower (*Erysimum capitatum* var. *angustatum*) and the Antioch Dunes evening primrose (*Oenothera deltoides* ssp. *howellii*), which are proposed for Endangered status (F.R. 6/16/76), are native to an area that has been subject to major industrial development.

The plants' survival depends upon maintenance of sufficiently large areas of the proper soil type and exposure, as well as the presence of appropriate insect pollinators.

This area has also been proposed as Critical Habitat for Lange's metalmark butterfly (see accompanying story).

Comments are due by April 8, 1977.

Caribbean Monk Seal

The Caribbean monk seal (*Monachus tropicalis*) has been proposed for Endangered status in a joint notice of rulemaking by the National Marine Fisheries Service and the Fish and Wildlife Service (F.R. 2/16/77).

The species already may be extinct, but the proposed rulemaking is intended to provide protection in the event that surviving members are discovered.

The Caribbean monk seal formerly was found on the shores and islands of the Gulf of Mexico and the Caribbean Sea. Sluggish on land and not easily alarmed or fearful of man, it was successfully hunted for its hide and oil by early Spanish colonists and later generations.

By 1952, its known occurrence was limited to Jamaican waters and Seranilla Bank in the western Caribbean.

Indiscriminate killing was a major factor in the decline of the species. A contributing factor was human encroachment on the species' feeding grounds, hauling-out beaches, and pupping areas. Although the seal was seemingly tame and tolerant of brief

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GPO 915-906



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES TECHNICAL BULLETIN

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The Gamble

Will Captive Breeding Save California Condor?



U.S. Fish and Wildlife Service Photo by Fred C. Sibley

Roosting condors at Sespe Condor Sanctuary (see map page 5).

In legends passed down from ancient times by the Chumash and other Indian tribes of the Far West, there is clear disagreement about the California condor. Some tales portray the carrion-eater with the huge wingspan as a symbol of good; in others, an appearance of the bird circling in the skies is a portent of bad times ahead.

Today, *Gymnogyps californianus* is at the center of another kind of "good" and "bad" conflict. Wildlife biologists generally agree that the largest land bird in North America is slipping slowly toward extinction. Less than fifty individuals remain, including one in captivity, and the California Condor Recovery Team estimates that the population is producing fewer than two young per year—not enough to maintain the present population level.

But there is disagreement over what could or should be done to preserve the condor. The focus of the controversy is a recommendation by the recovery team, in a "contingency plan" proposed last year, to initiate a captive breeding program in the fall of 1978.

Background of the Plan

The idea of a contingency plan—a last-ditch effort to save the condor by taking some individuals from the wild, breeding them in captivity, and eventually returning the progeny to the wild—was first brought up in the original condor recovery plan, approved in 1975. The plan itself, the prime objective of which was maintenance of a wild population of at least fifty individuals producing at least four young per year, did not

(continued on page 2)

Pending Rulemakings

With this issue of the BULLETIN, we are starting a new feature designed to provide our readers with advance notice of proposed and final rulemakings that are anticipated during the next 90 days. For the first such listings, turn to page 6.

Condor (continued from page 1)
advocate captive breeding. Rather, it specified detailed steps to maintain adequate nesting, roosting, and feeding conditions, to minimize annual mortality, and to increase public awareness of the bird's problems.

However, the plan noted the recommended steps may not suffice to save the condor "if numbers have fallen below that 'minimum population density' needed to sustain the species, or if some unidentified limiting factor continues to operate against it." Thus the plan also called for continued study of new methods to increase reproductive success and, if the situation becomes desperate, to implement a contingency plan to artificially increase productivity.

In mid-1976, after reviewing all evidence of the bird's continuing decline, the team decided to prepare its contingency plan.

This plan was not to be a substitute for implementation of the original recovery plan but rather a supplement to it. It called for action on two fronts: Establishment of a captive breeding program and construction of artificial nest structures in the Tehachapi Mountains to attract breeding condors to the abundant food supplies there.

The proposal has received both support and opposition. The World Wildlife Fund, the National Audubon Society, and the National Wildlife Committee of the Sierra Club have adopted resolu-

tions endorsing the general principle of captive breeding as an essential step for condor survival.

On the other hand, prominent wildlife biologists A. Starker Leopold and Carl Koford have questioned the proposal, calling it premature and full of risks. Other groups have indicated they will support the plan if, and only if, its adoption does not lead to the weakening of efforts to protect the bird's natural habitat.

The recovery team itself has admitted that the proposal represents a gamble—but without it, the team argues, extinction of the species is inevitable.

Major Issues

Discussions of the team's proposal have centered on four major issues:

1. Is captive breeding too big a gamble at this time?: The team, headed by Sanford R. Wilbur of the Fish and Wildlife Service, maintains that captive propagation, plus installation of the artificial nest sites, "should insure that the condors are given the best chance of survival." Delay in implementing the plan, contends Wilbur, will only decrease its chances of success.

The main element of risk involves removal of seven condors from the wild over a two-year period to form four breeding pairs. One of them would be paired with Topatopa, the lone captive condor, a female at the Los Angeles Zoo.

This would mean an approximately 15 percent reduction in the wild population; should captive breeding fail, this could speed up the process of extinction.

Ray C. Erickson, assistant director for endangered wildlife research at the Service's Patuxent Wildlife Research Center, believes "an absolute minimum" of nine condors should be captured to form a breeding pool of five pairs. This would permit greater geographical distribution of breeding facilities to help provide greater protection against regional air pollution. (Periodic analyses of Topatopa's feathers by Patuxent researchers have shown a steady increase in heavy metal concentration, apparently as a consequence of air pollution in the bird's environment.)

Strong opposition to captive breeding has come from Carl B. Koford of the University of California at Berkeley. Having done condor research in the 1940's and authored a comprehensive monograph on the bird for the National Audubon Society, he says: "Current biological knowledge of condors is inadequate to justify captures which will further endanger the wild population through reduction of numbers, and it is not certain that condors will breed better in cages than in the wild."

Koford rejects the team's claim that a rapid decision on captive breeding is critical to condor survival. Instead, he advocates "an impartial scientific review of evidence concerning the present status and welfare of the condor"; he feels that the Fish and Wildlife Service and the team have not made recent field data available to independent ornithologists to review. In addition, to pinpoint the causes of reproductive failure, he calls for two-to-three years of intensive field and laboratory studies of such factors as condor reproductive behavior, food and water availability (especially in light of the recent Western drought), pesticide and rodenticide burdens, and competition with golden eagles. From these studies, Koford maintains, less drastic means of saving the condor may be determined.

2. Will captive breeding succeed?: The recovery team believes that the successful breeding of Andean condors (*Vultur gryphus*) at the San Diego Zoo and the Patuxent Wildlife Research Center (see November 1976 issue of the BULLETIN), plus the fact that two female California condors produced a dozen eggs between them at the National Zoological Park in Washington, D.C., in the early 1900's, indicates the species will breed in captivity.

By taking eggs and young from the parents, production may be doubled or even tripled in captivity over what could reasonably be expected from their wild counterparts. In the wild, condors seem to lay a single egg no more frequently than every other year.

A. Starker Leopold of the University of

(continued on page 3)

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California at Berkeley, a member of the Forest Service Condor Advisory Committee, has reservations as to the ability of condors to breed better in captivity than in the wild. He notes:

- If wild condors are so touchy about disturbance near the nest, "it seems unlikely that they would be less so in a pen."
- Wild birds carrying a burden of DDT or other pesticide "would not lose it in captivity."
- "Random pairing of birds in pens might or might not lead to romance. I would suppose the chances of a compatible pair meeting would be greater in a free population."
- It is possible many of the condors are beyond the age of reproduction. "They won't get any younger in pens."

Observations in the field indicate that wild condors achieve adult plumage at five or six years of age. Whether they will reproduce at that age in captivity has recently come under question through observations of Topatopa at the Los Angeles Zoo. This bird is now 11 years old, but only last year began exhibiting courting behavior. The bird's development may have been slowed by many years of captivity, where exercise, diet, or lack of contact with other condors may have hindered development.

3. Is captive breeding already too late?: The recovery team estimates it would be "at least five to ten years" before California condors bred in captivity would be available for release back to the wild. The observations of Topatopa indicate that it could be as long as 20-to-30 years, if the first generation of birds is kept as breeding stock and only the second and later generations are released to the wild.

The length of time required to produce concrete results is one of the principal arguments for early implementation of the proposal. As the natural population continues to decline, the odds will steadily shift against any plan of action. However, if 10-to-20 years must pass before any release can start, there is the chance that the wild population will already have dropped below the critical point.

Some biologists also fear that over this period much of the present condor habitat may be lost to human encroachment and development of mineral resources. Moreover, it is possible that the condor is declining because of environmental conditions that cannot be reversed. Hence, even if captive breeding succeeds, the birds released to the wild may be doomed because of environmental deterioration.

The recovery team recognizes the possibility of continued habitat degradation, and it emphasizes that the full range of habitat protection called for in the recovery plan must accompany captive breeding. Other conservation groups

have expressed similar sentiments. Toby Cooper of the Defenders of Wildlife has noted that his organization could support the captive breeding plan only if there is "no erosion of the strength of the commitment to protect natural habitat."

4. Is the project economically sound?: The team has not yet estimated the costs of a captive breeding program. But the building and maintenance of facilities and the care of birds over several decades could total several million dollars. A Service review committee, which visited the team and the condor's habitat in March, has raised the question of whether it would be more prudent to invest this sum of money in the preservation of other species that may have a better chance of survival.

Dwindling Options

The review committee explored with team leader Wilbur the advisability of pursuing more research—as advocated by Koford—before deciding to proceed with captive breeding. Wilbur said there is little chance that an additional year of study would change the prognosis on the condor's fate or produce data to refute the need for captive breeding.

He pointed out that most of the recovery plan elements already carried out have had little noticeable beneficial effect.

Nesting and roosting sites have been closed to human activities of all types, and disturbance does not now appear to be a significant problem. The team, however, is concerned about additional oil drilling and pumping near and in the Hopper Mountain National Wildlife Ref-

uge, acquired as a condor refuge and supplemental feeding area. The Government has not yet acquired mineral rights on the ranchlands.

Condors have not been feeding as much on livestock and deer carcasses set out for them as in prior years. This low condor activity could be associated with increased oil drilling in the area, or it may be due to a change in the condor's range. Condors may fly 50 miles in search of carrion. After eating, they may perch awhile nearby and later return to their evening roost or nest—all in a period of about five hours.

The Pesticide Question

Wilbur said the effects of pesticides that have been used in the condor's range may have been severe enough to account for breeding reduction in the 1960's. Wilbur has found evidence of significant eggshell thinning in eggs dating back to this period; in addition, moderate-to-high levels of chlorinated hydrocarbons have been found in dead condors, including one bird that died after being shot last year.

The discovery of pesticide residues was something of a surprise, in that condors feed for the most part on livestock, which normally are not heavily contaminated. Wilbur speculates that the condor may have some unusual metabolic process that leads to increased pesticide concentration in its tissues, perhaps associated with its "boom or bust" feeding habits—gorging one day and fasting for the next two-to-four days. It is also possible condors are

(continued on page 4)



U.S. Fish and Wildlife Service Photo

California Condor (*Gymnogyps californianus*)

The California condor (*Gymnogyps californianus*), a member of the family *Cathartidae* of New World carrion-eating vultures, ranks as the largest land bird in North America. The adult condor is almost 4 feet long, weighs about 20 pounds, and has a wingspread of about 9 feet.

The average lifespan of the condor is believed to be about 20 years, with individuals attaining the age of 40 or more. Sexes are nearly identical in appearance (consequently the male-female ratio of the remaining 40-50 birds is undetermined). In the wild, condors assume their adult plumage at approximately 6 years of age, and they begin breeding some time thereafter.

Paired birds court as early as October and lay eggs between February and May. They do not build nests. Rather, they simply lay their eggs on the sandy floor or in a crevice of a natural cave set in sandstone cliffs. A clutch consists of only one egg, and incubation takes between 42 and 60 days.

The young bird remains confined to the cave for about 5 months. After that, being still unable to fly any significant distance, it stays in the vicinity of the cave for an additional period of about 10 weeks. After fledging, the immature bird continues to depend upon its parents for several months.

Because of this lengthy young-rearing process, condors usually cannot breed every year. Nevertheless, breeding in consecutive years may occur at times when there is an abundant food supply and an absence of competition for food between the young birds and adult birds.

Condor (continued from page 3)

taking up contaminants from other sources. There have been several documented cases of condor sickness, and one death, from birds feeding on poisoned rodents and other mammals.

Regardless of the source, Wilbur does not believe the contamination problem can be identified and corrected in time to help the condors.

In response to suggestions that condors should be captured to take tissue samples for pesticide analysis and for marking and release to study their range habits prior to capturing for propagation, Wilbur says such programs could be carried out at the same time birds are trapped for the breeding program. He says time is too limited, and the chances of uncovering pertinent new information too slim, to justify such a separate project.

In sum, Wilbur says there are enough condors now for six or seven breeding pairs, yet only at most two young are being produced each year. To replace birds dying from old age or accident, an estimated four or five young are needed annually just to maintain a total population of fifty birds.

Sexing Barrier

The team recommends that, if captive breeding is approved, trapping should begin in the fall of 1978. This would allow time for resolving problems associated with the methods to be used and obtaining the necessary permits.

One of the main barriers is the lack of a reliable sexing technique. Unlike the Andean condor, the California condor is not sexually dimorphic, and a chemical test is needed to differentiate male from female. A steroid sexing procedure developed by the San Diego Zoo, using chemical analysis of droppings, determined that Topatopa was a female. But the procedure subsequently has been found to be reliable only during the breeding season, and it is not known if it can be used to sex immature condors.

Dr. Ellen Rasch of Marquette University is developing a method for determining sex by measuring the weight of DNA in blood cells (female sex chromosomes are lighter) that already has worked well

with cranes. Her system requires the drawing of only a single drop of blood for a smear on a slide, and the analysis can be completed in a few hours. She will be applying the test this summer to the Andean condors at the Patuxent center in an experiment to see if the technique is applicable to California condors.

Another problem to be solved is the absence of an absolutely safe method of capturing condors. Condors are hardy birds, and prior experience with capturing Andean condors and turkey vultures has shown they can be taken with minimal risk of injury. However, the total safety factor is required because a large number of birds may have to be captured to obtain enough for breeding.

A decision still has to be made on whether immature birds or adults would make the best breeding stock.

The Patuxent center has had breeding success with all of its Andean condor stock, including birds captured at stages ranging from one year to adult. The taking of young birds could be advisable if air pollution is a factor, because they would be less likely to have accumulated contaminants in their tissues.

Location of Breeding Pens

Another undecided question is the location of breeding facilities. California Fish and Game Department officials, who have tentatively endorsed captive propagation as a last resort, believe the breeding should be done in California—both because of public sentiment to keep the birds close to home and to avoid the need to acclimate the birds to be released.

Ray Erickson has suggested that some of the breeding stock be moved to the Patuxent center, where operational production of Andean condors has been achieved in a thoroughly tested (11 years) facility, with experienced personnel, and where full productivity of the birds now shows no evidence of environmental contamination. He believes that a measure of insurance would be provided by locating at least one California condor breeding unit outside areas where dangerous pollution has already been found to be a serious problem.

Erickson also suggests that plans to

make releases to the wild should not overlook the possibility that some of the condor's former range, which extended through northern California, Oregon, and Washington to Puget Sound, may be more free of environmental problems and give better promise of successful reestablishment than southern California, where the condor is declining. Studies to determine the suitability of the northern Sierra Nevada, Cascades, and the Coast Range in the three Pacific Coast States should be an integral part of the research preceding actual releases of California condors produced in captivity, he said. Meanwhile, release experimentation in South America with Andean condors now being produced at the Patuxent center will provide guidance concerning the methods of release most likely to succeed with the California condor.

Artificial Nest Sites

The team's proposal to build two or three artificial nest sites—to be located in the Tehachapi Mountains, one of the condor's main feeding areas—is intended to enhance propagation in the wild. The nest sites would be constructed of fiberglass or other materials to simulate sandstone cliffs and would be located much nearer to reliable food sources than present nesting sites. It is the recovery team's belief that the absence of condor activity around suitable existing nest sites may be part of the reason for decreased nesting.

If artificial cliffs are erected, the team feels they may be used by condors. But there is no evidence that condors have in the past pioneered new nesting habitats. Thus this proposal is considered much less significant, although admittedly also less risky, than captive breeding.

The value of artificial nest structures, however, may become evident when captive-bred condors born in these structures in captivity recognize and use them when they encounter them in the wild.

All of the issues are under careful review by the Fish and Wildlife Service. The Service plans to develop a course of action in the next few months that will help encourage, insofar as is feasible with available resources, the continued survival of the condor.

Key Meeting on Wildlife Survival Set for June

The 2nd Symposium on Endangered North American Wildlife and Habitat is scheduled to be held in St. Louis, Mo., on June 1-5, 1977.

Entitled "Wildlife Survival: Orientation for Action," the June meeting is to be devoted to exploring what can be done about a worsening situation. The symposium, to be sponsored by Mutual of Omaha, will be hosted by the Wild Canid Survival and Research Center.

Among the more than 60 guest speakers and panelists will be keynote speaker

Stewart Udall, former Secretary of the Interior; Marlin Perkins, zoologist, television personality, and acting director of WCSRC; and Keith M. Schreiner, associate director of the U.S. Fish and Wildlife Service and manager of the Service's Endangered Species Program. Schreiner will speak on recovery teams and plans and their role in Endangered species conservation.

For further information on the symposium, write to WCSRC, Box 16204, St. Louis, Missouri 63105.

Correction

The title of a new Alabama Museum of Natural History publication was incomplete as printed in the December-January issue of the BULLETIN. The full title is *Endangered and Threatened Plants and Animals of Alabama*. The publication is available for \$5 from the Alabama Museum of Natural History, P.O. Box 5897, University, Alabama 35486.

Counting Condors: Annual Survey Performed Since 1965

Distribution of California Condors

The current population estimate of between 40 and 50 California condors is based upon a survey made October 13-14, 1976.

Condor studies have been conducted annually in October since 1965 and have yielded a fairly consistent number of sightings.

One of the major survey difficulties is the vastness of the mountainous terrain used by the condors. An important variable is the weather. Condors tend to fly on warm days, leaving their nest sites and roosts after the sun has heated the air, and subsequently soaring on thermals.

In last fall's survey, 12 observation stations were manned by 36 watchers from noon until 5 p.m. on each day. Seven of the stations had been prebaited with goat or deer carcasses to attract as many condors as possible to the stations. The weather on both days was fair, with scattered clouds, light-to-moderate winds, and temperatures in the 70's and 80's, depending on the elevation of the stations.

Sightings Total 160

The first day produced 60 individual condor sightings by the watches. These were reduced by analysis to a probable actual total of 18 condors (14 adults, 3 subadults, and 1 unclassified as to age). Four of the birds were spotted at the Sespe Condor Sanctuary (see map), 2 adults in the Santa Barbara County mountains, and the remainder at the Tejon Ranch in Kern County.

About 100 sightings were made on the second day. This was reduced to a probable total of 22 different birds (17 adults and 5 subadults). Again most of the sightings were at the Tejon Ranch, which is a major feeding ground for the birds.

The largest single group seen either day consisted of 10 condors. The survey included only a few individual sightings, and there was good correlation between stations. Thus the estimated two-day total of 40 birds was considered by the California Condor Recovery Team to be "very close to the actual numbers of condors using the survey area."

Background

The survey was initiated in 1965 by the California Department of Fish and Game, which formed a California Condor Survey Committee composed of representatives of the State, U.S. Fish and Wildlife Service, National Audubon Society, U.S. Forest Service, and the California Division of Forestry.

The committee established a survey protocol that has been followed since then with some refinements. The first year, 70 observation stations were selected, including many fire lookout posts. Observers were given two training sessions each of four days duration.



California Department of Fish and Game Map

U-shaped range is believed to contain all remaining California condors, divided into two populations. The Sespe population nests year-long near Ojai and also ranges inland along the Sierra Mountains May-September. Coast range population based in Santa Barbara and San Luis Obispo Counties has an August-December seasonal range north to San Jose.

These sessions were to acquaint observers with the biology of the condor and its flight characteristics compared with those of the golden eagle, turkey vulture, and other raptors inhabiting the area. The observers also were taken into the field to enable them to become familiar with the local topography. Thereafter, the training of observers was undertaken prior to each survey.

Basic Technique

In performing the survey, observers use report forms on which are recorded the time condor sightings are made, direction in which the birds are flying, and other such pertinent comments as apparent age and plumage characteristics. These data are then reduced to eliminate duplicate sightings by two or more stations; this is done by triangulating flights path on a large map.

Service Clarifies Status of Wild Burro

To settle recent confusion about the legal status of the wild burro, a feral form of *Equus asinus* occurring in many Western States, the Service has issued a

notice of clarification stating that the wild burro is not an Endangered species under the terms of the Endangered Species Act of 1973 (F.R. 3/24/77).

The confusion stemmed from the fact that, since 1970, the African wild ass (*Equus asinus*) has been listed as Endangered in its natural range of Ethiopia, Somalia, and the Sudan (F.R. 6/2/70).

The original listing of the African wild ass came under the Endangered Species Conservation Act of 1969, which provided for separate native and foreign lists. At that time, the species was included only on the foreign list. The subsequent Endangered Species Act of 1973 abolished the distinction between the two lists, and the first combined list published after passage of the new act (F.R. 9/26/75) failed to note that only the African populations of the species were listed.

When the list is next republished in the *Federal Register*, the entry for *Equus asinus* will clearly indicate that the listing applies only to the wild populations in Africa. This is considered to be purely correction of a clerical error, not a change in the status of the wild burro.

Black Toad

The black toad (*Bufo exsul*) has been proposed for Threatened status and its range in Inyo County, Calif., has been proposed for listing as Critical Habitat (F.R. 3/11/77).

This species occurs only in Deep Springs Valley, where its habitat consists of small areas in the vicinity of Antelope Springs and Buckhorn Springs. Suitable habitat in these areas covers only 9,300 square meters (about 2.3 acres).

The chief threat to the black toad is represented by man's need for water. Periodic recanalizing of the stream channels at Buckhorn Springs to provide water for livestock and irrigation lowers the water table in the marshlands where the toads breed. This causes parts of the marshlands to dry out, which can have a severe effect on the toad population if it occurs after oviposition but before the tadpoles have metamorphosed into toads.

Overcollection is also a threat to the species. Noted for its attractive coloration, the black toad has long been a favorite with amphibian collectors. In the 1960's, for example, the toad population in the easternmost area around Buckhorn Springs declined as a result of overcollecting.

The Buckhorn Springs areas were closed to the public in 1971, but the Antelope Springs areas are still readily accessible.

The Service believes that Threatened status would further discourage collectors, in addition to the protection provided by the State of California, which already prohibits the taking, possession, or sale of black toads.

The areas proposed for Critical Habitat consist of a major area of marshlands in the vicinity of Buckhorn Springs and a relatively small area of marshlands at nearby Antelope Springs.

Comments are due by May 13, 1977.

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	36	227	263	2	17	19
Birds	66	144	210	1		1
Reptiles	8	46	54	1		1
Amphibians	4	9	13	1		1
Fishes	30	10	40	4		4
Snails		1	1			
Clams	22	2	24			
Crustaceans						
Insects	6		6	2		2
Plants						
Total	172	439	611	11	17	28

Number of species currently proposed: 92 animals
1850 plants (approx.)

Number of Critical Habitats proposed: 39

Number of Critical Habitats listed: 6

Number of Recovery Teams appointed: 57

Number of Recovery Plans approved: 8

Number of Cooperative Agreements signed with States: 17

March 30, 1977

Pending Rulemakings

The Service expects to issue rulemakings on the subjects listed below during the next 90 days. Final decisions on these anticipated actions will depend upon completion of the analysis of comments received and/or new data made available, with the understanding that such analysis may result in modification of the content or timing of the original proposal, or the rendering of a negative decision.

The status or action being considered for the following is given in parentheses:

Final Rulemakings

- Plant regulations
- Captive self-sustaining populations regulations
- Bald eagle (modification of status in Lower 48 States)
- Marianas mallard (Endangered)
- Leopard darter (Threatened)
- Slackwater darter, Alabama cavefish, spotfin chub, slender chub, yellowfin madtom (Endangered)
- 26 snails (Endangered and Threat-

ened)

- St. Croix ground lizard (Endangered)
- Giant anole (Endangered)
- San Clemente Island species (Endangered)
- 14 plants (Endangered and Threatened)
- Florida everglade kite (Critical Habitat)
- Peregrine falcon, California (Critical Habitat)
- Palila, Hawaii (Critical Habitat)
- Cape Sable sparrow, Florida (Critical Habitat)
- Dusky seaside sparrow, Florida (Critical Habitat)
- Morro Bay kangaroo rat, California (Critical Habitat)

Proposed Rulemakings

- Ozark big-eared bat (Endangered)
- Virginia big-eared bat (Endangered)
- African elephant (similarity of appearance to Asian elephant)
- Timber wolf (modification of status in Lower 48 States)



ENDANGERED SPECIES TECHNICAL BULLETIN



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

Changes In ES Law Proposed

Legislation recently has been introduced in Congress to amend section 7 and other provisions of the Endangered Species Act of 1973.

A series of four essentially identical bills (H.R. 4167, H.R. 5002, H.R. 5079, and H.R. 6838) were introduced by Representative Robin Beard (R-Tenn.) to make section 7 nonretroactive. Beard's amendments would add new language to the section exempting all Federal public works projects on navigable waters from compliance if the "construction, reconstruction, or operation" of the project commenced prior to initiation of the listing process for a species occupying a habitat that would be affected adversely by the project.

If adopted, the proposal would permit the Tennessee Valley Authority (TVA) to complete its Tellico Dam and allow other ongoing water resource projects to proceed without running into possible violations of the law. The U.S. Court of Appeals for the Sixth District last January 31 permanently enjoined the TVA from closing the nearly completed dam and creating a reservoir that would destroy the Critical Habitat of the Endangered snail darter (*Percina tanasi*) lying along a 17-mile stretch of the river above the dam. The court said the injunction would remain in effect until either Congress exempts the dam from compliance or the snail darter is deleted from the Endangered list or its Critical Habitat is materially redefined (see February 1977 issue of BULLETIN).

In his legislation, Beard included a provision for the Secretaries of Interior and Commerce to take protective measures, such as translocation, to minimize the adverse effects of a project on a Critical Habitat.

Bills have been introduced by Representative Albert Gore Jr. (D-Tenn.) and Representative John J. Duncan (R-Tenn.) (H.R. 4557 and H.R. 5879) to exempt the Columbia Dam and reservoir on the Duck River in Tennessee and the Tellico Dam from compliance with sections 4 and 9 of the Endangered

(continued on page 2)

EIS Study To Chart 10-Year Planning Goals of Endangered Species Program

The Endangered Species Program has begun a major initiative to prepare an environmental impact statement (EIS) that will spell out alternative goals, priorities, and impacts of the program through the 1980's.

An EIS team of Fish and Wildlife Service personnel is being formed under the direction of James M. Engel, who has been brought to Washington, D.C., from the Service's regional office in Minneapolis. Also included on the team will be Lori Williams (Washington), Lloyd Lyndvall (Baltimore), Jim Johnson (Albuquerque), and personnel from several other Service programs.

The team expects to produce a final draft within 12-to-18 months. It is estimated that the entire effort may cost the Service as much as \$250,000.

Scope and Coverage

Still in the conceptual stage, the EIS is intended to cover the entire Endangered Species Program within the Service. It is not intended to address the activities of the Department of Commerce's National Marine Fisheries Service which, under the Endangered Species Act of 1973, has responsibility for marine species.

Engel expects the EIS to make a section-by-section analysis of the 1973 Act to determine the program's impact upon the environment and society.

Says Engel: "In addition, this will be a planning document that will set down on paper the kinds of actions we think will occur in the next 10 years. We will assess those actions as they relate to the environment, and lay out an array of alternatives to indicate what we believe can be done to improve the environment or to reduce man's impact upon it.

"We expect to address many key issues as they relate to specific species, such as the eastern timber wolf and grizzly bear, as well as addressing issues by types of species and sets of problems. For example, the large predators like the grizzly and wolf pose a similar problem in that there is a question of how large a population society will tolerate.

"Of course, society includes people living far away and right in or near wolf and bear habitats. Consequently the tolerance level differs quite a bit, according to proximity. Our task will be to lay out the alternatives from an environmental standpoint. As has been true in the

(continued on page 2)



Photo by D. B. Means

Endangered status proposed for Florida pine barrens treefrog (see page 5)

EIS (continued from page 1)

past in some Endangered Species Program actions, we do not expect everyone will agree that the alternatives eventually selected by the decisionmakers are best for them. But the purpose of an EIS is to figure out the best way to protect the environment, and in this case specifically to protect endangered species. These are our primary concerns."

Engel says the EIS will include an overall statement of the Service's Endangered species mission—and under that mission, the long- and short-term goals. In his words:

"I expect the most frustrating part of writing the statement will be in trying to get everyone to agree on the goals and where we should be in 10 years or how we will get there. For every 10 people we are going to get 10 different ideas. And that holds true in setting priorities."

Goals and Priorities

The EIS team will not be starting from scratch. Engel says the team will be drawing upon a draft program management document (PMD) recently prepared by the Endangered Species Program, a draft EIS prepared in 1973 for an Administration-proposed Endangered Species Act (H.R. 4758), which differed somewhat from the final 1973 act, and a draft EIS for implementing the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

The draft PMD sets forth goals for the program and also contains a priority system to help determine which Endangered species should get first call on available resources. Generally, the PMD recommends priority for U.S. species over foreign species, and for full species over subspecies or populations. It estimates there are now about 2,500 taxa for which sufficient data can be assembled for listing as Endangered or Threatened in the next two years. The PMD says there are an additional 6,500 taxa that could be listed by 1985.

Engel says the team will be looking beyond the PMD since it will be developing alternatives that weigh the various budgetary, political, manpower, and expertise constraints on goals over the next decade.

Moreover, the EIS writers will be looking at the State grant-in-aid formula to ensure that it reflects the "best mix" of available resources.

In Engel's view, the Endangered Species Program has been undergoing a period of development for the past three years. Much time and effort has been spent in formulating regulations and guidelines and in learning how to execute the many administrative tasks demanded by the law—that is, assembling a "vehicle."

"The EIS is in a logical sequence to tie everything together," he adds. "We have the vehicle, and the EIS will tell us how to get where we want to go."

Law (continued from page 1)

Species Act of 1973. The Columbia Dam would eliminate half of the total known population of Dutton's river snail (*Io armigera duttoniana*), recently proposed for listing as Threatened and for Critical Habitat designation. Under the proposed amendment, any adverse effects on Endangered or Threatened species caused by the dams would "not be deemed to be a taking of any endangered species" within the meaning of section 9, or a taking of a Threatened species if prohibited by regulation under section 4.

An amendment (S. 363) offered by Senator James A. McClure (R-Idaho) would require the filing of a full environmental impact statement in conjunction with the designation of "any area or areas as critical habitats."

Financial losses to farmers and others from eastern timber wolf predation have prompted Representative James L. Oberstar (D-Minn.) to seek a pilot program for compensation. H.R. 1966 would set up a Federal-State project to compensate owners for verifiable destruction of or injury to livestock and pets by timber wolves in Minnesota; \$600,000 would be authorized to carry out the pilot program through September 30, 1981. Oberstar's measure also would establish a \$100,000 study to survey the type and extent of damage caused by wolves and determine what could be done to mitigate it.

Companion bills (S. 1316 and H.R. 4741) have been introduced by Senator John C. Culver (D-Iowa) and Representative Robert L. Leggett (D-Calif.) to extend the authorization of grant-in-aid funds for the States at \$3 million a year in fiscal years 1978, 1979, and 1980. A total of \$6 million was appropriated for grants-in-aid for FY 1976 and FY 1977.

Another bill introduced by Representative Leggett (H.R. 6405) would relax some of the prerequisites for a State to enter into a cooperative agreement with the Service. It would amend section 6(c) of the act by enabling a State to enter into a cooperative agreement even if it lacked authority to regulate and manage some resident listed taxa, if the State and the Secretary of the Interior can agree on a priority program for those listed species for which the State does have authority. The proposed amendment would also make it possible for a State that has become newly interested in endangered species, without a past history of conservation programs, to obtain the agreement. Finally, it would authorize a total of \$16 million for grants-in-aid for fiscal years 1978 through 1981.

Representative Lindy Boggs (D-La.) has introduced H.R. 4568 to exempt antique articles made from Endangered or Threatened species from import restrictions under section 9 of the law. The articles would have to be eligible as 100-year-old antiques under Federal tariff classifications.

U.S. Fish and Wildlife Service Washington, D.C. 20240

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California Steps Up Efforts To Protect 67 Endangered, Threatened, Rare Species



California Department of Fish and Game photo

San Joaquin kit fox is fitted with radio collar for management study

Rapid population growth and accompanying economic development are continuing to swallow up habitat that once supported a richly varied and abundant wildlife in California.

State authorities are predicting that, at the present growth rate, California's population will swell to 56 million by the year 2020—more than double the current total of 22 million.

"When the valleys and coastal plains fill up with people and irrigated croplands, little will remain of the natural ecosystems that once supported California's unique flora and fauna," says Howard R. Leach, nongame wildlife coordinator for the California Department of Fish and Game, and also the head of the State's endangered wildlife program.

Half of the State's acreage is in public ownership, much of it mountain and desert terrain. But as wildlife habitat, it too is subject to pressure through resource development and heavy recreational usage.

First State ES Act

Californians have a constant reminder of the State's depletion of wildlife resources, in that the State emblem carries a picture of the grizzly bear—which was extirpated in the State early in this century.

Over the past decade, the State has adopted an increasingly aggressive stance to prevent other unique species going the way of the grizzly. Among these are the California condor (*Gymnogyps californianus*), southern bald eagle (*Haliaeetus leucocephalus leucocephalus*), Morro Bay kangaroo rat

(*Dipodomys heermanni morroensis*), Santa Cruz long-toed salamander (*Ambystoma macrodactylum croceum*), and blunt-nosed leopard lizard (*Crotaphytus silus*).

In 1970, the California legislature enacted the first State endangered species legislation. The California Species Preservation Act directed the California Department of Fish and Game to inventory California's threatened species and report to the governor and legislature biennially on the status of these animals.

Under the State's Endangered Species Act, also passed in 1970, the State Fish and Game Commission has listed 49 animals as endangered or rare (18 additional species occurring in the State are listed as Endangered or Threatened by the Federal program).

There is also State legislation to identify and protect endangered and rare native plants. The California Native Plant Society has identified some 600 plants that it believes are endangered or rare. Many of these are candidates for listing under the Federal act as well.

Habitat Acquisition

Howard Leach recalls that, prior to 1970, the California Department of Fish and Game, like similar agencies in other States, was largely concerned with game species. A nongame wildlife program—Special Wildlife Investigations—was started in 1968 with \$56,400 in Federal Pittman-Robertson Act funds for restoration of wildlife. "We compiled a listing of 129 animals native to California whose status was undetermined and undertook a study of shorebirds and seabirds,"

Leach says. "At the time we weren't particularly concerned with endangered species."

Also in 1968, the California legislature passed the Ecological Reserve Act, giving the California Department of Fish and Game the authority to acquire lands and waters supporting endangered species or unique habitats. When the environmental movement of the 1970's began sweeping the State and the Nation—thereby focusing more attention on endangered wildlife—this law became a key part of the California nongame program, along with other legislation to fund the acquisition of habitat.

Currently, the nongame program is budgeted at \$2.5 million a year, including \$676,000 in State and Federal funds earmarked specifically for endangered species. Much of the money goes into the purchase of habitat.

Since 1970, the State has established 18 ecological reserves—corresponding to Federal natural research areas—for scientific study and public use. (The California Natural Areas Coordinating Council has drawn up a list of 2,300 natural areas, many of which qualify as ecological reserves. A significant number are already in State or Federal ownership.)

Federal-State Programs

In FY 1977, California received an Endangered Species Program grant of \$450,000. Part of the money was earmarked for the purchase of an ecological reserve for the Morro Bay kangaroo rat.

The nearby Morro Rock Ecological Reserve—an 80-foot high outcrop at the entrance to Morro Bay at San Luis Obispo—shelters a pair of nesting American peregrine falcons (*Falco peregrinus anatum*). The Rock is under the administration of the California Department of Parks and Recreation. It is protected by special provisions of the Fish and Game Code and constitutes an example of interagency cooperation within the State.

Extensive studies are being performed on the habitat needs of the San Joaquin kit fox (*Vulpes macrotis mutica*) and the blunt-nosed leopard lizard to support recommendations that have been made for Critical Habitat determination. Accelerated land leveling for farming and industry development in the San Joaquin Valley has reduced these species to a marginal existence in some areas of the valley. The fox is listed as Endangered by the Federal program and as rare by California, which estimates the population at 10,000. The foothills population of the fox, still unaffected by development, appears to be stable.

In the San Francisco Bay area, efforts are underway to preserve habitat for the salt marsh harvest mouse (*Reithrodontomys raviventris*), distinctive for its ability to drink salt water.

(continued on page 4)

California (continued from page 3)

Endangered species activities in FY 1977 are concentrated on the species determined to be most critically endangered. These include the California condor, southern bald eagle, Aleutian Canada goose (*Brenta canadensis leucopareia*), American peregrine falcon, light-footed clapper rail (*Reithrodontomys longirostris levipes*), California least tern (*Sterna albitrons browni*), Morro Bay kangaroo rat, and a total of six species of butterflies.

Fish, Amphibians, Reptiles

The California Department of Fish and Game, Inland Fisheries Branch, has set up a program (similar to the nongame wildlife program) to protect endangered fish, reptiles, and amphibians. In FY 1977, this program, budgeted at \$104,000, provided for population and habitat surveys, identification and taxonomic analysis, life history investigations, and management.

Among the fish involved in the program are the Mohave chub (*Gila mohavensis*), Owens River pupfish (*Cyprinodon radiosus*), Tecopa pupfish (*Cyprinodon nevadensis calidae*), Colorado River squawfish (*Ptychocheilus lucius*), and unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*)—all listed as Endangered by both the State and Federal programs. Three other species of chubs and three species of suckers are listed as endangered by the State.

Biologists recently have discovered two apparently pure populations of Lahontan cutthroat trout (*Salmo clarki henshawi*) in creeks in Fresno and Tuolumne counties and are attempting to determine their status. This trout was reclassified from Endangered to Threatened under the Federal program in 1975; the California population remains at 1,500 adults, according to the State, which recently has begun a program to reestablish this native subspecies in additional waters within its native range.

Program Management

Until last year, the State's nongame program operated with a limited staff of three biologists, a secretary, and 36 man-months of seasonal aid time with assistance from field personnel in various other departmental functions. The \$450,000 grant to California by the Federal Endangered Species Program in FY 1977 enabled the State to assign four biologists to the endangered species program to augment the work of the State's six regional offices.

Leach says: "Our regional offices are responsible for inventory and for keeping apprised of factors affecting the welfare of endangered species, including the review of environmental impact reports and enforcement of protective laws."

The Inland Fisheries Branch now has two biologists—one for fishes and invertebrates, and the other for reptiles

and amphibians. They develop research and management projects and assist in surveys, inventories and habitat protection programs. Steve Nicola is in charge of the program.

To stretch out limited funds for research and meet an increasing workload, the California Fish and Game Department has turned to university students and graduates, contracting with them personally, rather than with the university.

"This way," Leach says, "the student receives the funds directly. He or she works under our supervision and receives credit for the research. The research reports are prepared as wildlife administrative reports, thus getting the data into print right away." Students are then free to seek formal publication in scientific journals.

Interagency Cooperation

California's program is dependent upon interagency cooperation—both State and Federal—and the help of private conservation groups.

California's fish and game department makes a biennial report to the governor and legislature entitled "At the Crossroads," which gives the status of each endangered or rare species. In the most recent report (January 1976), credit was given to the contributions made by other governmental agencies. For example, the State Department for Parks and Recreation established natural reserves within the park system for the California least tern and the yellow-billed cuckoo (*Coccyzus americanus occidentalis*), which is listed as rare by the State; the Department also preserved habitat for the Morro Bay kangaroo rat and the Peninsular bighorn sheep (*Ovis canadensis cremnobates*), also listed as rare.

The State Lands Commission was

instrumental in acquiring Bair Island Ecological Reserve in San Francisco Bay for the salt marsh harvest mouse, California clapper rail, and California least tern. The State Department of Transportation assisted in restoring Valencia Lagoon for the Santa Cruz long-toed salamander, and the State Department of Forestry currently was supporting the protection of other species through California's new Forest Practices Act. The 1976 report adds:

"Federal agencies such as the U.S. Fish and Wildlife Service, U.S. Forest Service, National Park Service, Bureau of Reclamation, and Bureau of Land Management have also made substantial contributions since 1970. Among these have been the establishment of Humboldt Bay, South San Francisco, San Pablo Bay, Anaheim Bay, and Hopper Mountain National Wildlife Refuges [by the Fish and Wildlife Service]."

"In addition, Federal agencies have set aside critical habitats as Natural Research Areas and similar environmental protection units. Examples are the West Anacapa Island Natural Research Area for the California brown pelican. Hi-Mountain-Huff's Hole Endangered Species Habitat Area for the peregrine falcon and California Bighorn Sheep Zoological Area."

Various State and Federal activities are coordinated through an Endangered Species Interagency Coordinating Council. Among the many conservation groups associated with the program are the Citizen Nongame Advisory Committee (appointed by the director of the California Department of Fish and Game), California Natural Areas Coordinating Council, California Native Plant Society, National Audubon Society, Sierra Club, Nature Conservancy, and the National Wildlife Federation.

(continued on page 5)



Photo by A. I. Roest, California Polytechnic State University

Morro Bay kangaroo rat is benefiting from Federal grant to aid purchase of ecological preserve. Note incomplete hip stripe which differentiates it from other species having a full stripe.

Rulemakings (continued from page 6) even when agents have live or full-mounted specimens. Consequently, the Endangered species cannot be protected fully.

The brown caiman, common caiman, and New Guinea crocodile exemplify an additional difficulty in that they are all subspecies. Unfortunately, there are no readily identifiable external characteristics to distinguish subspecies of Endangered crocodilians from either non-Endangered species or other Endangered subspecies. Crocodilian subspecies can be identified only by cranial bone structure, internal organs, or geographical location.

Furthermore, it is very difficult for law enforcement personnel to identify crocodilian hides and parts; as Dr. F. Wayne King of the New York Zoological Society has noted, it is almost impossible even for expert herpetologists to determine the origin of finished crocodilian products. Tanning and dyeing alter the color of hides, and the manufacture of shoes, handbags, wallets, etc. often destroys all identifying characteristics.

Law Enforcement Difficulties

The difficulty in identifying and differentiating seriously hampers prosecution efforts under the Endangered Species Act of 1973, since successful prosecution requires proof that the items in question are from Endangered species. Consequently, the deterrent value of the act is greatly diminished. In addition, the direct threat to the Endangered species continues, for it is known that there is a heavy traffic in crocodilian hides and products and that many of the crocodilians involved are members of Endangered species.

Geographical location distinctions also create a major difficulty. For example, law enforcement agents often are powerless to prevent the taking, sale, transport, or export of American crocodiles because they cannot prove conclusively that the crocodile in question is from the critically Endangered Florida population and not from the non-Endangered populations elsewhere in the Americas.

The Service believes that the proposed rulemaking would increase protection of the Endangered species, restore deterrent value to the 1973 act, and substantially facilitate successful prosecution of violations of the act pertaining to crocodilians.

Comments on the proposed rulemaking should be submitted by July 6, 1977.

Pine Barrens Treefrog

To prevent extirpation of a unique member of the Florida gulf coast herpetofauna, the Service has proposed Endangered status and Critical Habitat designation for the Florida population of the pine barrens treefrog (*Hyla anderssonii*) (F.R. 4/5/77).

The pine barrens treefrog occurs in South Carolina, North Carolina, New

Jersey, and Florida. However, the Florida population, isolated from the others by distances of more than 750 kilometers (465 miles), is unique in its coloration pattern, mating calls, and body proportions. At present, its precise relationship to those other populations remains to be determined.

The Florida population was discovered in 1970 in Okaloosa and Walton counties in the Florida Panhandle. By 1972, however, all of the Walton County populations had been extirpated as a result of development and land clearing for agricultural purposes. The remaining seven populations in Okaloosa County now total less than 500 individuals. Consequently, seven small areas within the county have been proposed for Critical Habitat.

Florida state law currently protects the species against taking, possession, and specimen transport. The proposed rulemaking would provide habitat protection and additional discouragement to would-be collectors, especially through enforcement of interstate commerce prohibitions.

Comments are due by June 3, 1977.



Photo by George E. Drewry

Underside view of a golden coqui on glass plate

Golden Coqui

Threatened status and Critical Habitat designation have been proposed for a recently discovered species of frog, the golden coqui (*Eleutherodactylus jasperi*), and its territory in east-central Puerto Rico (F.R. 4/5/77).

A small, brightly colored, live-bearing amphibian, the golden coqui is found only in certain upland areas to the south of the town of Cayey, and it lives only in water-containing bromeliads of the genera *Vriesia*, *Hohenbergia*, and *Guzmania*.

Dense bromeliad growth appears to be a critical factor in determining the presence of golden coqui populations. Frog-inhabited plants usually occur in clusters, indicating that dispersal distances tend to be short.

The areas proposed for Critical Habitat consist of portions of Cerro Avispa, Monte el Gato, and Sierra de Cayey. Arranged in a semicircle 10 kilometers (6.25 miles) in radius, these areas all lie between 700 and 850 feet above sea level.

Because of their moderate rainfall and temperatures, these lands are in great demand for agricultural and other purposes. Consequently, human development represents the principal threat to the continued existence of the golden coqui.

Furthermore, the species' habitat is susceptible to fire damage. Prior to a fire in 1973, for example, one particular area was known to have golden coquis in bromeliads on the ground, in low trees, and on some large boulders. Only the frog-inhabited bromeliads on the boulders survived the fire.

In addition, the Service is concerned that the golden coqui's "unique reproductive adaptation and attractive coloration are likely to create a large demand for specimens for scientific, educational and display purposes."

The rulemaking under consideration would provide the first regulations for the protection and conservation of this species. Comments are due by June 6, 1977.

California (continued from page 4)

Howard Leach says the fish and game department's relations with Federal agencies at the local level generally have been rewarding, but problems do exist in implementing sections 4 and 7 of the Endangered Species Act. "In my opinion," Leach says, "there is urgent need for improvement in the Federal-State consultation process at the national level if the program is to work."

California strongly opposed the recent Federal designation of the southern sea otter (*Enhydra lutris nereis*) as Threatened (see February 1977 issue of BULLETIN) because the State feels the otters are expanding their range and depleting shellfish along the southern California coast. The State has approved in principle the California Condor Recovery Team's proposal to take some condors from the wild for captive breeding (see April 1977 issue of BULLETIN). But the department wants more detail on the cost and the breeding plans before giving final approval. Under the terms of California's cooperative agreement with the Federal Government, a State permit would be required before any condors could be taken from the wild.

Leach expresses his concern that too many states are relinquishing control over resident Endangered species to the Federal Government.

"It should be the responsibility of every State to determine what are their endangered species," he says, "and provide State funds to be matched with Federal funds to develop the programs."

Leach is hopeful that, with continued public and financial support, California's endangered wildlife program can meet the challenge to restore these animals to nonendangered status.

He adds, "California's program has come a long way in seven years, but we have much farther to go."

RULEMAKINGS

April 1977

Look-Alike Crocodilians Proposed for Treatment As Endangered Species

To provide further protection for Endangered crocodilians, the Service has proposed treating eight other species and subspecies of crocodilians as Endangered under the terms of the "similarity of appearance" clause of the Endangered Species Act of 1973 (F.R. 4/6/77).

The eight "look-alike" species and subspecies are the brown caiman (*Caiman crocodilus fuscus*); the common caiman (*Caiman crocodilus crocodilus*); the dwarf caiman, or Cuvier's smooth-fronted caiman (*Paleosuchus palpebrosus*); Schneider's smooth-fronted caiman (*Paleosuchus trigonatus*); the American crocodile (*Crocodylus acutus*) other than the Florida population (which is classified as Endangered); Johnston's crocodile (*Crocodylus johnstoni*); the New Guinea crocodile (*Crocodylus novaequineae novaequineae*); and the salt water crocodile (*Crocodylus porosus*).

Five of the proposed look-alikes also are included in a petition submitted to the Service by Dr. Frederico Medem of Colombia; he recommends that they be listed as Endangered in their own right. The biological status of these five currently is being reviewed by the Service's Office of Endangered Species.

Two of the other species identified in Medem's petition already are listed as Endangered. They are among the total of twenty species and subspecies of crocodilians designated as Endangered.

Differentiating among Crocodillans

The eight look-alikes so closely resemble Endangered species that agents of the Service's Division of Law Enforcement have difficulty differentiating among Endangered and non-Endangered species. This holds true

(continued on page 5)

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Specetes			Number of Threatened Specetes		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	36	227	263	2	17	19
Blrds	66	144	210	1		1
Reptiles	8	46	54	1		1
Amphblans	4	9	13	1		1
Fishes	30	10	40	4		4
Snalls		1	1			
Clams	22	2	24			
Crustaceans						
Insects	6		6	2		2
Plants						
Total	172	439	611	11	17	28

Number of species currently proposed: 94 animals
1850 plants (approx.)

Number of Critical Habitats proposed: 41

Number of Critical Habitats listed: 6

Number of Recovery Teams appointed: 57

Number of Recovery Plans approved: 8

Number of Cooperative Agreements signed with States: 17

April 30, 1977

PENDING RULEMAKINGS

The Service expects to issue rulemakings on the subjects listed below during the next 90 days. Final decisions will depend upon completion of the analysis of comments received and/or new data made available, with the understanding that such analysis may result in either modification of the content or timing of the original proposal, or issuance of a negative decision.

For each of the following subjects, the status or action being considered is given in parentheses.

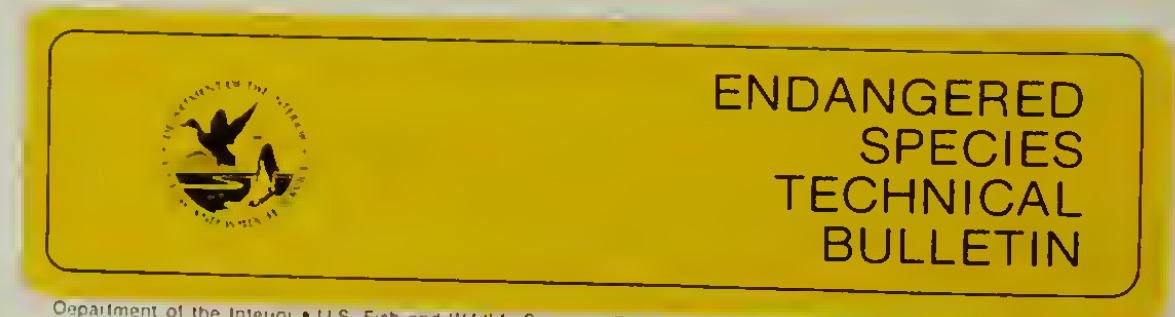
Pending Final Rulemakings

- Plant regulations
- Captive self-sustaining populations regulations
- Bald eagle (modification of status in Lower 48 States)
- Marianas mallard (Endangered)
- Leopard darter (Threatened)
- Slackwater darter, Alabama cavefish, spotfin chub, slender chub, yellowtin madtom (Endangered)

- 26 snails (Endangered and Threatened)
- St. Croix ground lizard (Endangered)
- Giant anole (Endangered)
- San Clemente Island species (Endangered and Threatened)
- 14 plants (Endangered and Threatened)
- Florida everglade kite (Critical Habitat)
- Peregrine falcon, California (Critical Habitat)
- Palila, Hawaii (Critical Habitat)
- Cape Sable sparrow, Florida (Critical Habitat)
- Dusky seaside sparrow, Florida (Critical Habitat)
- Morro Bay kangaroo rat, California (Critical Habitat)

Pending Proposed Rulemakings

- Ozark big-eared bat (Endangered)
- Virginia big-eared bat (Endangered)
- African elephant (similarity of appearance to Asian elephant)
- Timber wolf (modification of status in Lower 48 States)
- 11 U.S. beetles



Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

May 1977 Vol. II, No. 5



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

President Speeds Federal Critical Habitat Survey

President Carter has directed the Secretaries of Interior and Commerce to coordinate a Government-wide survey of all Federal lands to speed up the identification of Critical Habitat for Endangered and Threatened species.

The survey was ordered by the President in his May 23 environmental message to Congress, "to hasten the protection of threatened and endangered species."

In an accompanying memorandum to the Secretaries of Interior, Agriculture, and Defense and the Chairman of the Tennessee Valley Authority, the President said the Federal Government "should provide leadership in identifying and protecting" habitat that is critical to the survival of species listed under the Endangered Species Act of 1973. The President added: "Federal programs should be coordinated in a way that will provide timely assistance to the Secretary of the Interior and the Secretary of Commerce in determining the habitat which is critical for the survival and recovery of those endangered and threatened species."

Directive Details

The affected Federal agencies were directed by the President to

- Identify, to the extent feasible, in consultation with the Secretary of the Interior and/or the Secretary of Commerce, "areas on lands under your jurisdiction or control which appear to you" to be Critical Habitat.

- Provide data and information to assist the Secretaries of Interior and Commerce "in determining whether or not the areas identified by you constitute critical habitat."

- Exercise caution in the modification of "any area identified by you" and seek consultation with Interior/Commerce concerning any proposed modifications until a Critical Habitat determination is made.

(continued on page 2)

First ES Captive Breeds Designated; Permit Rules Eased for Propagators

New rules have been issued by the Service designating 11 Endangered species being bred in the United States as the first captive, self-sustaining populations (CSSP's). The regulations, contained in a final rulemaking (F.R. 6/1/77), will make it easier for zoos, circuses, game bird breeders, and other propagators of Endangered species to engage in interstate and foreign commerce involving members of the 11 CSSP's.

The Service recognizes that certain species, although clearly Endangered in the wild, are being bred in captivity in such numbers that they qualify for designation as CSSP's.

The 11 CSSP's are as follows:

- brown-eared pheasant (*Crossoptilon mantchuricum*)
- Edward's pheasant (*Lophura edwardsi*)
- bar-tailed pheasant (*Syrnaticus himalaicus*)
- Mikado pheasant (*Syrnaticus mikado*)
- Palawan peacock pheasant (*Polyplectron emphanum*)
- Swinhoe's pheasant (*Lophura swinhoii*)
- tiger (*Panthera tigris*)

- leopard (*Panthera pardus*)
- jaguar (*Panthera onca*)
- ring-tailed lemur (*Lemur catta*)
- black lemur (*Lemur macaco*)

The ruling, effective immediately, stipulates that these CSSP's (and others added in the future) are determined to be Threatened, whereas wild populations of the same species will continue to be listed as Endangered.

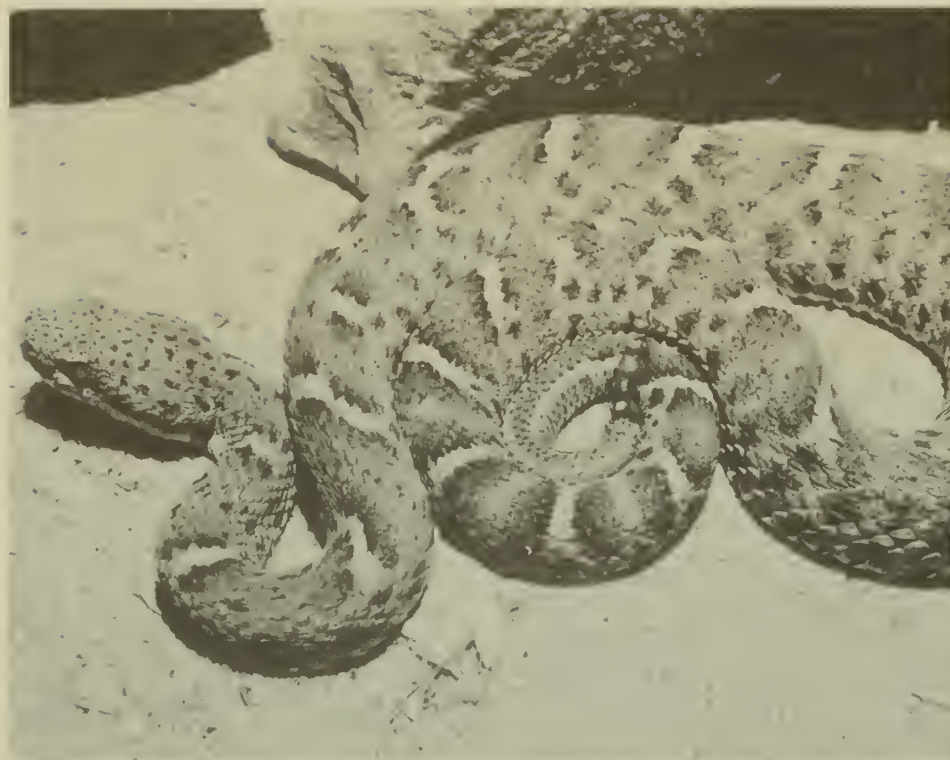
Consequently, special permits for interstate commerce and certain other activities will be made available for CSSP's. However, activities involving animals from Endangered wild populations of these species will still require the more stringent permits normally issued under the provisions of the Endangered Species Act of 1973.

In addition, the ruling amends the permit requirements to buy, sell, import, export, or otherwise deal with CSSP's. Furthermore, to clarify the purposes for which permits may be issued, the ruling defines one of the act's key phrases—"enhancing the survival of the species"—as it relates to all Endangered and Threatened species (not just CSSP's).

(continued on page 3)



White Bengal tiger is among eleven Endangered species that fall under new captive breeding rules in the U.S.



Endangered status and critical habitat have been proposed for the New Mexican ridge-nosed rattlesnake which is threatened with extinction because of overcollecting. An 18-inch specimen of the attractively colored snake commands a \$200 pricetag—live. For rulemaking, see page 5.

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President

(continued from page 1)

- Encourage States and private citi-
zens to join in the identification of
Critical Habitat on lands within the
agencies' jurisdiction or control.

Timetables To Be Set

The President also directed the Secre-
taries of Interior and Commerce to take
the following steps:

1. Develop timetables for the imple-
mentation of his request, to ensure that
the information is compiled "within the
shortest possible time."

2. Provide the necessary guidance
and cooperation to ensure efficient
compliance.

3. Expedite the agencies' determina-
tions of Critical Habitat.

The Endangered Species Program,
within the Department of the Interior,
will act as coordinator of the expanded
effort to identify Critical Habitats.

FWS Budget Increase

In his May 23 message, President
Carter requested Congress to increase
the Fish and Wildlife Service's FY 1978
budget by \$23 million. The additional
funds would be used for environmental
research, for migratory bird protection,
and for aiding State endangered species
programs.

Presidential Initiatives

The President also took the following
wildlife management initiatives:

- *Exotic species:* Executive Order No.
11987 was issued restricting the intro-
duction of exotic animals and plants into
the United States. The order prohibits
the establishment of such species on
lands and waters managed by the
Federal Government, unless the Secre-
tary of Interior or Agriculture determines
that there will be no adverse effects on
natural ecosystems. The President also
directed the Secretary of the Interior,
in consultation with the Secretary of Agri-
culture and the heads of other agencies,
to develop additional rules dealing with
the import and export of exotic species.

- *Conservation laws:* The President
said recent laws enacted to conserve
wildlife "pose the risk of creating a
confusing system of overlapping and
conflicting requirements." Accordingly,
he directed the Council on Environmen-
tal Quality to perform a six-month study
to develop steps that could be taken to
simplify, coordinate, and codify the
body of law affecting wildlife conserva-
tion. The study is to be done in consulta-
tion with the States and Federal agen-
cies.

Use of Poisons

Mr. Carter pledged his administration
to continue support of a previous
Presidential order prohibiting the rou-
tine use of poisons for killing predators
on public lands. "If control is necessary,"
he said, "it should focus on the individual
predators causing the problem—not the
species as a whole."

CSSP's

(continued from page 1)

At the time of the final rulemaking, the Service's Federal Wildlife Permit Office had 35 permits in various stages of processing. Applications had been submitted on the basis of the proposed rulemaking by individuals and organizations that were eager to participate.

Anticipated Effect

Underlying the CSSP rulemaking is the recognition by the Service that survival of Endangered species in captivity can assist in furthering the intent of the Endangered Species Act of 1973. Captive individuals provide gene pools that deserve continued preservation, and their increasing numbers may make it possible to reestablish or rejuvenate wild populations.

The successful maintenance of CSSP's usually depends on zoos and other propagators being able to effectively transfer breeding stock and progeny. This activity is generally expensive, however, and requires a major investment in facilities, food, personnel, and other items. Success in this activity often depends on the propagator's ability to sell surplus animals to help meet expenses.

The Service's interest in this matter is not the profitability of transactions involving CSSP's, but the need for maintaining the CSSP's themselves.

The dual purpose of this rulemaking, therefore, is to permit qualified institutions and individuals who breed and raise Endangered species in captivity to buy and sell certain of these animals in interstate commerce, and to continue to provide all such species with full protection under the Endangered Species Act of 1973.

The direct effect on propagators will be a reduction in the degree of regulation of captive animal populations that meet the criteria established to determine that they are self-sustaining. Explains Endangered Species Program Manager Keith M. Schreiner: "The new rule will reduce regulation of the breeders' activities and relieve them of undue paperwork, delays, and a cumbersome permit procedure."

Comments Received

Following issuance of the rulemaking in proposed form (F.R. 5/5/76), the Service received a total of 52 comments from individuals, organizations, and State governments. There were 17 responses from zoos and zoological societies, 10 from State governments, 9 from bird breeders, 6 from conservation organizations, 4 from circuses and related organizations, 4 from private individuals, and 1 each from an animal dealer and a falconry club.

These responses covered such subjects as the criteria to be used for determination, the species proposed for CSSP determination, enhancement of



A pair of Mikado pheasants, CSSP game birds

Game Bird Gazette photo

species survival, and the overall CSSP permit system. Based on a careful and extensive review of these comments, the Service revised the original proposal and issued the final rulemaking.

CSSP Determination Criteria

The criteria for determining CSSP status remain essentially unchanged. The following data are needed as the basis for a CSSP determination:

1. The approximate number of living specimens of the species that exist in captivity in the United States.
2. The age and sex of such captive specimens.
3. The number of people who have successfully bred them in captivity.
4. The number of generations that have been successfully bred in captivity.
5. The likelihood that persons owning or controlling captive specimens will cooperate in ensuring continued reproduction among specimens.
6. The number of requests received by the Service to take or import wild specimens of the same species during the 2 years immediately prior to the date on which consideration of the species was undertaken.
7. The ratio of wild-born to captive-born specimens in captivity in the United States.
8. Such other factors as the Director of the Service may deem appropriate.

The First CSSP's

The original proposal listed a total of 16 candidates for CSSP determination. One of these, the white-eared pheasant (*Crossoptilon crossoptilon*) was removed from consideration because there appeared to be too few individuals in captivity—that is, no more than 48 of the birds. However, it was agreed to reconsider the status of this species if and when additional data are submitted to the Service.

Four other species were deleted from the original CSSP list as a result of the Service's decision to preclude from consideration any Endangered species that is native to the United States. The

Service believes that listing any such species as a CSSP would seriously weaken effective protection of the species, because individuals unlawfully captured in the wild could be falsely described as belonging to a CSSP.

Survival Enhancement

The Service has broadened the definition of the phrase "enhancing the survival of the species," making it applicable to both Endangered and Threatened species, including CSSP's. Furthermore, in response to several comments, the Service has added to its list of permitted activities.

The principal addition is a provision for euthanasia of animals that are terminally ill, critically injured, or infirm because of old age or genetic defects. Also permitted under certain conditions is the live exhibition of animals so as to educate the public concerning the ecological roles of, and the need to conserve, Endangered and Threatened species.

Permit Requirements

The CSSP permit, obtainable with one application and valid for 2 years (and renewable thereafter), can authorize a single activity, a series of activities or unlimited activities involving CSSP's. This simplified permit procedure no longer makes it necessary, as in the past, to apply for separate permits for each activity and each specimen.

The paperwork burden has been reduced by eliminating, in most cases, the requirement for annual written reports. Instead, permit holders are to report their transactions on a new, multi-copy form to be provided by the Service. Data from the completed forms will enable the Service to monitor the status of captive animals of certain species in the United States and to ensure that they will continue to reproduce successfully in captivity.

Additional information on the permit requirements is available from the Federal Wildlife Permit Office, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

Rulemaking Actions May-June 6, 1977

FINAL RULINGS

Marianas Mallard

The Service has issued a final rulemaking that determines the Marianas mallard (*Anas oustaleti*) to be an Endangered species (F.R. 6/2/77). This ruling takes effect on July 5, 1977.

The Marianas mallard has been found only on the islands of Guam, Rota, Saipan, and Tinian, all of which are located in the Mariana Islands in the western Pacific Ocean.

The duck's habitat consists of freshwater lakes with reed beds, lagoons, streambeds, and flooded fields. Because these wetlands are being extensively drained, the duck's essential habitat is shrinking rapidly. Duck hunting also poses a threat to this species.

The Marianas mallard is now very rare and its numbers are decreasing. Population estimates indicate that there may be as few as two of the birds alive today and probably no more than twenty-five. Although the Endangered listing will provide these remaining birds with full protection under the Endangered Species Act of 1973, it is possible that the species already has declined to the point where it no longer can be found on one or more of the islands identified as its habitat.

Background

On May 22, 1975, the Fund for Animals, Inc. asked the Service to list a total of 216 taxa of plants and animals as Endangered species under the terms of the Endangered Species Act of 1973. Although not on the U.S. list of Endangered species, all 216 species were already included in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

In response to the Fund's request, the Service issued a proposed rulemaking that would have determined the 216 species—including the Marianas mallard—to be Endangered (F.R. 9/26/75). Subsequently, the Service issued a final rulemaking (F.R. 6/14/76) listing 159 of the 216 species as Endangered (See July 1976 issue of the BULLETIN).

Owing to a procedural oversight, however, the Marianas mallard was not included in this final rulemaking. As a result, the Service has now proceeded to issue this separate final ruling.

St. Croix Ground Lizard

In a final rulemaking on the St. Croix ground lizard (*Ameiva polops*), the Service has determined that the species should be listed as Endangered and that its remaining range in the U.S. Virgin Islands should be designated as Critical Habitat (F. R. 6/3/77).

None of the comments on the original proposal (F.R. 1/10/77; see also Febru-

ary 1977 issue of BULLETIN) recommended any changes. Consequently, the final ruling is identical with the proposal. The ruling becomes effective on July 5, 1977.

PROPOSED RULINGS

Houston Toad

To protect remaining populations of the Houston toad (*Bufo houstonensis*), eight separate areas in southeastern Texas have been proposed by the Service for designation as Critical Habitat for the species (F.R. 5/26/77).

Discovered in 1953 and listed as Endangered since 1970, the Houston toad is a relict species that ranks among the rarest and most critically endangered amphibians in the United States.

A small brown toad that lives solely in isolated stands of loblolly pine, it is seldom seen other than during the



Photo by M. J. Littlejohn

A rare picture of a Houston toad

breeding season, which lasts from late February until late June.

Unlike other toads, this species forms only small breeding groups, which reproduce in rainwater pools that occur in the porous sandy soils of the pine stands. This breeding characteristic has enabled the species to maintain its integrity and avoid reproductive competition with the southern toad (*Bufo valliceps*) and the Woodhouse toad (*B. woodhousei*), which occur in the same region but require relatively permanent bodies of water in order to reproduce.

The Houston toad is found only in eight localities—six in Harris County and one each in Bastrop and Burleson Counties. Based on the findings and recommendation of Dr. Robert A. Thomas of Texas A & M University, the Service has determined that these eight localities constitute the Critical Habitat of the toad.

The chief threat to the species is agricultural and urban expansion, especially in Harris County, which includes the rapidly growing city of Houston and major suburbs.

Comments on this proposal should be submitted by August 24, 1977.

Three Mona Island Reptiles

The Service has proposed listing three Mona Island reptiles as Threatened and designating the island as their Critical Habitat (F.R. 5/26/77).

The three reptiles, all unique to Mona Island, are the Mona boa (*Epicrates monensis*), the Mona Island ground iguana (*Cyclura stejnegeri*), and the Mona blind snake (*Typhlops monensis*).

Comments on this proposed rulemaking are due by August 24, 1977.

Background

Officially part of the Commonwealth of Puerto Rico, Mona Island is located in Mona Passage midway between Puerto Rico and the Dominican Republic, about 42 miles west of Puerto Rico.

The 21.35-square-mile island is mostly a semiarid, hilly expanse of limestone and dolomite covered by low dry forest and shrubs.

The island's vegetation includes almost 400 vascular plant species, of which 11 percent currently may be either rare or endangered.

Fauna include a few crustaceans, over 500 species of insects, several noninsect invertebrates, and almost 100 species of birds (including the eastern brown pelican, the peregrine falcon, and the yellow-shouldered blackbird, all of which are on the U.S. List of Endangered and Threatened Wildlife).

The hawksbill sea turtle uses the beaches of Mona Island extensively for nesting; in fact, the island is one of the hawksbill's last remaining nesting areas. (In addition, the island's beaches may also be used for nesting by other species of sea turtles.)

Mona Island supports eight other species of reptiles, including the three proposed for Threatened status. Five of these reptiles are lizards.

There are only two species of native mammals, both of them bats. However, introduced mammals such as mice, rats, cats, goats, and pigs are numerous, and they all either prey on or compete for food with native species.

Threatened Reptiles

The principal threat to the three proposed species is the possibility of extensive economic development of the island. Current plans call for the establishment of a major oil superport.

Although construction is not imminent, the Service believes that implementation of these plans would result in a severe reduction of available habitat, especially nesting areas, for the three species.

(continued on page 5)

Rulemakings

(continued from page 4)

Predation and competition by introduced mammals also have contributed to the increasing scarcity of the three proposed species, as well as other native reptiles. Although hunting of goats and pigs is now allowed, there are no other provisions for curbing predators and competitors on the island. Furthermore, visiting hunters occasionally kill Mona boas and Mona Island ground lizards.

Increased Protection Needed

At present, the three proposed species are afforded only limited protection under law.

International trade in Mona Island ground lizards and Mona boas is regulated, in that all species of ground iguanas and boas are listed for protection under Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Under Puerto Rican law, public hunting is not allowed on Mona Island during the iguana nesting season. Furthermore, it is forbidden to kill iguanas or collect their eggs without a special permit from the Puerto Rico Department of Natural Resources.

There are no existing regulations that specifically provide protection for either the Mona boa or the Mona blind snake.

New Mexican Ridge-Nosed Rattlesnake

The Service has issued a proposed rulemaking to add the New Mexican ridge-nosed rattlesnake (*Crotalus willardi obscurus*) to the Endangered list and to designate the snake's range in southwestern New Mexico as Critical Habitat (F.R. 5/26/77).

The U.S. range of this subspecies covers a total area of no more than a few square miles. It consists primarily of portions of Indian Creek Canyon and Bear Creek Canyon, in the Animas Mountains of Hidalgo County. Characterized by pine-oak woodland, these canyon areas lie between 6,200 and 8,000 feet above sea level.

The New Mexican ridge-nosed rattlesnake is also found in a comparable environment in the Sierra de San Luis, located in the adjoining Mexican state of Chihuahua.

Overcollection constitutes the principal threat to both the U.S. and Mexican populations. Although the snake was relatively abundant when discovered in 1961, collection has greatly reduced its numbers. Its attractive coloration, very limited range, and increasing rarity have resulted in a growing demand for both scientific and commercial purposes. A small (18-inch-long) live specimen now commands a market price of more than \$200.

Consequently, demand also has resulted in some environmentally destructive collection activities, such as the use of dynamite to expose the snake's dens.

Another major consideration is that economic development in the nearby Playas Valley, which is the proposed site of a copper ore reduction plant and associated facilities for its workers, could result in increased recreational use of the Animas Mountains. This is likely to have an adverse effect on the snake and its habitat.

The New Mexican ridge-nosed rattlesnake currently is listed as endangered by the State of New Mexico. In addition, the Service has entered into agreement with the local cattle company that owns the two canyons to close the areas to all collectors. However, evidence indicates that, unless the snake is given full protection, its decline will continue to the point of extinction.

Based on a study by Dr. Herbert S. Harris of the Natural History Society of Maryland, the Service proposes to list all elevations in the Animas Mountains above 6,200 feet as Critical Habitat for the snake.

Comments on this proposed rulemaking should be submitted to the Service by August 24, 1977.

Atlantic Salt Marsh Snake

Threatened status has been proposed by the Service for the Atlantic salt marsh snake (*Natrix fasciata taeniata*), found only in three counties on the Atlantic coast of central Florida (F.R. 6/2/77).

Comments on this proposed rulemaking are due by September 1, 1977.

Background

Although it was already identified and described before 1900, this snake remains one of the least-known North American reptiles, perhaps because its habitat traditionally has been inhospitable to man.

There are no available estimates of the present population of the subspecies. As of 1974, only 35 individual specimens were known to science—that is, were held in museum collections—and only one study had been conducted on the subspecies (Carr and Goin, 1942).

Recently, however, a new study on the physiology of the Atlantic salt marsh snake has been undertaken by Howard I. Kochman of the Florida State Museum.

(continued on page 6)

TURTLES PROPOSED FOR STATUS REVIEW

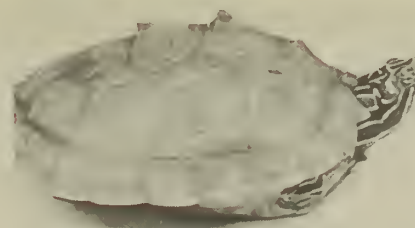
The Service has announced that it will review the status of 12 species of turtles to determine whether any or all of them should be proposed for listing as either *Endangered* or *Threatened* species (F.R. 6/6/77).

Comments are due by August 5, 1977. In addition to inviting responses

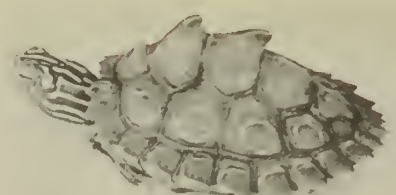
from any interested parties, the Service is seeking the views of the governors of the States where these species of turtles are known to be found.

The species to be reviewed are listed in the table below.

Common Name	Scientific Name	Distribution
Alabama red-bellied turtle Suwanee cooter	<i>Chrysemys alabamensis</i> <i>Chrysemys concinna</i> <i>suwanniensis</i>	Alabama Florida, Georgia
Red-bellied turtle	<i>Chrysemys rubriventris</i>	Delaware, Maryland, Massachusetts, New Jersey, North Carolina, Virginia
Cagle's map turtle Yellow-blotched turtle Ringed sawback Sabine map turtle	<i>Graptemys caglei</i> <i>Graptemys flavimaculata</i> <i>Graptemys oculifera</i> <i>Graptemys pseudogeographica sabinensis</i>	Texas Mississippi Louisiana, Mississippi Louisiana, Texas
Texas map turtle Key mud turtle Illinois mud turtle	<i>Graptemys versa</i> <i>Kinosternon bauri bauri</i> <i>Kinosternon flavescens</i> <i>spooneri</i>	Texas Florida Illinois, Iowa, Missouri
Flattened musk turtle Black-knobbed sawback	<i>Sternotherus depressus</i> <i>Graptemys nigrinoda</i>	Alabama Alabama, Mississippi



Black-knobbed sawback



Ringed sawback

Photos by Robert H. Mount

Rulemakings

(continued from page 5)

ES Act Protection

The subspecies currently is known in 10 localities of Volusia, Brevard, and Indian River Counties. These localities provide a brackish- and salt-water environment consisting of tidal creeks and salt marshes.

Intensive drainage and economic development have reduced the habitat available to the snake. If it continues unabated, the subspecies may be driven to extinction.

Habitat alteration is breaking down the ecological isolating barriers that separate the varieties of salt marsh snakes occurring along the Florida coast. Consequently, hybridization among subspecies could begin, and this would significantly reduce the Atlantic salt marsh snake population.

The Florida Committee on Rare and Endangered Plants and Animals already has listed this subspecies as endangered. However, based on data supplied by Howard Kochman, the Service has tentatively concluded that the snake should be designated as a Threatened species under the Endangered Species Act of 1973. Such a designation would give the subspecies considerable protection against collection, thereby enhancing the likelihood of its continued existence.

Pending Rulemakings and Notices of Review

The Service expects to issue rulemakings and notices of review on the subjects listed below during the next 90 days. The status or action being considered for each final and proposed rulemaking is given in parentheses.

The decision on each final rulemaking will depend upon completion of the analysis of comments received and/or new data made available, with the understanding that such analysis may

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	36	227	263	2	17	19
Birds	67	144	211	1		1
Reptiles	9	46	55	1		1
Amphibians	4	9	13	1		1
Fishes	30	10	40	4		4
Snails		1	1			
Clams	22	2	24			
Crustaceans						
Insects	6		6	2		2
Plants						
Total	174	439	613	11	17	28

Number of species currently proposed: 97 animals

1850 plants (approx.)

Number of Critical Habitats proposed: 45

Number of Critical Habitats listed: 7

Number of Recovery Teams appointed: 57

Number of Recovery Plans approved: 8

Number of Cooperative Agreements signed with States: 17

June 6, 1977

result in modification of the content or timing of the original proposal, or the rendering of a negative decision.

Pending Final Rulemakings

- Bald eagle (modification of status in Lower 48 States)
- Leopard darter (Threatened and Critical Habitat)
- Slackwater darter, Alabama cavefish, spotfin chub, slender chub, yellowfin madtom (Threatened and Critical Habitat)
- 26 snails (Endangered and Threatened)
- 6 butterflies (Critical Habitat)
- Contra Costa wallflower and Antioch Dunes evening primrose (Critical Habitat)
- Giant anole (Endangered)
- San Clemente Island species (Endangered)
- 14 plants (Endangered and Threatened)
- Florida Everglade kite (Critical Habitat)
- Peregrine falcon, California (Critical Habitat)
- Palila, Hawaii (Critical Habitat)
- Cape Sable sparrow, Florida (Critical Habitat)
- Dusky seaside sparrow, Florida (Critical Habitat)

- Morro Bay kangaroo rat, California (Critical Habitat).

Pending Proposed Rulemakings

- Ozark big-eared bat (Endangered)
- Virginia big-eared bat (Endangered)
- African elephant (similarity of appearance to Asian elephant)
- Timber wolf (modification of status in Lower 48 States)
- 11 beetles (Endangered and Threatened)
- Puerto Rican whip-poor-will (Critical Habitat)
- Laysan duck (Critical Habitat)
- 2 harvestmen and 1 snail (Endangered and Threatened)

Pending Notices of Review

- Status of bobcat and lynx
- Status of river otter

Reference Note

All Service notices of review and final and proposed rulemakings are published in full detail in the *Federal Register*. The parenthetical references given in the BULLETIN—for example, (F.R. 6/20/77)—identify the date that the notice or rulemaking appeared in the *Federal Register*.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES TECHNICAL BULLETIN

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Photo by Dick Randall, Defenders of Wildlife

Possible overharvest of bobcat is being investigated by ESSA

ESSA Setting Wildlife Trade Policies

The Endangered Species Scientific Authority (ESSA), a new agency established by Presidential order to formulate biological policy for U.S. import and export of imperiled wildlife and plants, became fully operational in July with the appointment of an executive secretary and publication of an interim charter.

Under terms of the charter (F.R. 7/11/77), ESSA is developing biological criteria on a priority basis for all species listed under Appendix I and II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. These standards will be used by ESSA to evaluate import and export applications filed with the Fish and Wildlife Service's Federal Wildlife Permit Office (WPO) to ensure that Convention species will not be jeopardized by international trade activity.

Comments on the proposed charter are due by September 9.

Dr. William Y. Brown, 29, has been selected as the new executive secretary. A former consultant to the Fish and Wildlife Service and professor at Mount Holyoke College, Brown holds a doctorate in zoology from the University

of Hawaii and a J.D. degree from Harvard Law School.

Although funded by the Department of the Interior, ESSA will function under its charter as a semiautonomous interagency organization, with its seven agency representatives taking action by majority vote.

ESSA Members

The new agency is composed of the following members: John Spinks (chairman), chief of the Fish and Wildlife Service's Office of Endangered Species; Dr. Robert L. Williamson, Department of Agriculture; Dr. Joe R. Held, Department of Health, Education and Welfare; Dr. R. V. Miller, Department of Commerce; William Sievers, National Science Foundation; Dr. Lee M. Talbot, Council on Environmental Quality; and Dr. David Challinor, Smithsonian Institution.

ESSA Responsibilities

Under the rules of the Convention, the Federal Wildlife Permit Office (WPO) has to determine that certain
(continued on page 2)

Plant Regulations Issued, Clearing Way for Listings

Regulations governing interstate and foreign commerce in Endangered and Threatened plants, effective July 25, 1977, have been issued by the Service (F.R. 6/24/77).

The final rulemaking clears the way for the Service to begin a series of listings on the 1,871 U.S. and foreign plants that have been proposed for Endangered status.

The new regulations establish a flexible permit system to allow legitimate commerce to continue in jeopardized plant species while protecting those plants remaining in the wild. Under the Endangered Species Act of 1973, it is illegal—except by permit—to import or export, or to sell, offer for sale, deliver, receive, carry, transport, or ship in interstate or foreign commerce, listed plants. The regulations provide for two categories of permits:

1. *Endangered plants*: Permits will be issued for scientific purposes or to enhance the propagation or survival of these species. In some instances, permits may be issued for up to a year to relieve economic hardship.

2. *Threatened plants*: Permits may be issued for scientific purposes, for enhancement of propagation or survival of the species, economic hardship,
(continued on page 5)

Permit Workshops

The Federal Wildlife Permit Office has been conducting a series of workshops around the country this summer to acquaint the public with Fish and Wildlife Service regulations and to demonstrate how to fill out applications for Endangered species permits.

The remainder of the schedule calls for workshops to be held in the following cities: Chicago—September 9; New York City—September 28; and Atlanta—October 5 (tentative). For further information contact: Inez Connor (202) 634-1496.

requirements are met before issuing permits allowing trade in Appendix I and II species. The importation and exportation of Appendix I species, all threatened with extinction and actually or potentially affected by trade, will be highly restricted. Permits will be issued for trade in these species only under exceptional circumstances. Permits must also be issued for the exportation of Appendix II species, which are not now threatened with extinction but may become so unless their trade is strictly regulated.

Prior to permit issuance for trade in Appendix I and II species, ESSA must advise WPO of certain findings:

- That export will not be detrimental to the survival of the species
- That introduction of listed specimens from the sea will not be detrimental to survival of the species and, for Appendix I, that the recipient is suitably equipped to house and care for living specimens
- That import of Appendix I specimens from other countries will be for purposes that are not detrimental to the survival of the species, and that living specimens will be suitably housed and cared for

Need for Biological Criteria

Executive Secretary William Brown says that the development of sound biological criteria covering survival and housing and care requirements for each protected species "are essential if the permit applicant and the general public are to understand how applications are evaluated and if deficiencies in this process are to be corrected." Initially, ESSA will be establishing its own criteria concurrently with evaluating permit applications. But Brown acknowledges that devising truly sound criteria will require more information on Convention species than is currently available.

Accordingly, ESSA is soliciting recommended criteria for its findings from the field, together with biological and trade information to support them. The proposed interim charter suggests a form to follow in supplying the needed information, which will be welcome on a continuing basis.

Help From States Sought

Brown is seeking guidance from the States to learn what impact trade will have on species in the wild. He also is looking for assistance from the States to develop systematic tagging of pelts to certify State of origin.

Currently, ESSA is reviewing data to determine the status of the bobcat (*Lynx rufus*), an Appendix II species that may be declining and overharvested in many States. Unless evidence is presented to the contrary, ESSA may bar further export of bobcat pelts taken in 1977-78.

A similar evaluation is being made of the river otter (*Lutra canadensis*), the lynx (*Lynx canadensis*), and the American ginseng plant (*Panax quinquefolius*), also listed on Appendix II. Brown says, "It's important to remember that these species can be exported only if ESSA is able to find that it won't hinder their survival—and has data to back up that finding."

Imports a Concern

Besides protecting U.S. species from overexploitation, ESSA must oversee the import of Appendix I species from other nations, even though the scientific authorities of those countries have given their approval for export. What concerns Brown in such cases is the possibility that such a demand could be created in this country for a foreign species that it could become rapidly depleted in its native country.

In this connection, Brown is offering assistance to other countries that are party to the Convention to help set up their scientific authorities.

In making decisions on commercial export, Brown says: "I think our top priority has to be control over U.S. exports. If we can't do it, how can we ask other countries to take care of their wildlife?"

Endangered Plants Book

The New York Botanical Garden has published the proceedings of its Bicentennial symposium, held May 11-13, 1976, on the status of Threatened and Endangered species of plants throughout the Americas. Titled *Extinction is Forever*, the volume describes a number of steps that could be taken by professional and concerned laymen to solve the problems facing many plant species and their ecosystems, including a proposal to "buy time" for determining less destructive development of the Amazon's tropical forests.

The symposium was sponsored by the National Science Foundation, The Organization of American States, The World Wildlife Fund, and The Achelis Foundation.

Publication of the 437-page volume was financially supported by the Fish and Wildlife Service and the National Park Service. Copies are available for \$20 each from Publications Department, New York Botanical Garden, Bronx Park, N.Y. 10458.

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Osprey, Peregrine Falcon Gain in New Jersey's ES Program

The osprey (*Pandion haliaeetus*) is making an impressive comeback along New Jersey's coast, helped along by manmade nesting structures, eggs transplanted from Maryland, and a decline in DDT levels.

The American peregrine falcon (*Falco peregrinus*) also is on its way back. This spring, two males and a female—among the first four captive-bred falcons hacked to the wild in 1975-76—returned to their tower nesting sites in New Jersey.

The osprey and peregrine falcon projects head a list of a dozen endangered species research studies being conducted by New Jersey's Division of Fish, Game and Shellfisheries, under the direction of Russell A. Cookingham, within the State Department of Environmental Protection.

Paul D. (Pete) McLain, deputy director of the division, is in charge of its Endangered and Nongame Species Project, and is assisted by a nongame zoologist and a nongame biologist.

The division also includes a Nongame Section, which conducts investigations on nongame species and surveys colonial nesting birds, and an Exotic Wildlife Section to regulate commercial wildlife activities and enforce endangered species regulations.

First Federal Pact

New Jersey's relatively small but well-rounded program originated as the result of a 1973 law enacted by the State Legislature. The law qualified New Jersey to become the first state to submit a cooperative agreement to the U.S. Fish and Wildlife Service and receive aid for Endangered species. Most of the 19 species listed as endangered by the State also are listed by the Federal Endangered Species Program.

The State's Endangered and Nongame Species Project for FY 1978 is budgeted at \$73,000, including a \$25,000 Federal Endangered Species Program grant. Since 1974, the annual budget has ranged between \$100,000 and \$25,000. In FY 1977, following a State budget cut, the program was supported by \$25,000 appropriated from the sale of hunting and fishing licenses and \$25,000 in Federal Aid in Wildlife Restoration (PR) funds.

Osprey Project

One of the first projects launched in 1974 was an aerial inventory of ospreys. This demonstrated that the once-plentiful fishhawk was in serious trouble. Only 50 active nests were located, whereas more than 500 had existed prior to the 1950's.



New Jersey Department of Environmental Protection photo

These young ospreys were hatched on manmade tower in New Jersey; the eggs were transplanted from osprey nests in Maryland to help rebuild the New Jersey population

Pete McLain attributes the sharp decline to the heavy use of pesticides for mosquito control along the coastal wetlands in the 1950's and 1960's. Feeding extensively on fish that had accumulated DDT and other pesticides, the ospreys absorbed chlorinated hydrocarbons to the point where they became infertile or laid thin-shelled eggs that would break during incubation.

With the cooperation of the Maryland Department of Natural Resources Nongame Project, arrangements were made to transplant osprey eggs from the Chesapeake Bay and the Potomac River area into nests in New Jersey. A total of 16 eggs were placed in five active nests in 1974; 12 of these eggs hatched.

During the study period (1974-77), 41 young have fledged. Three pairs have returned to nest and have raised young. McLain expects more returns in two years' time, when more birds have sexually matured.

Including birds fledged from the 1975 transplant crop, the total number of active osprey nests has risen to 72. New nests have been established on 14 especially built telephone pole nesting structures erected by McLain's unit—several in Barnegat Bay and the rest elsewhere along the New Jersey coast.

Analyses conducted by Stanley N. Weimeyer of the Service's Patuxent Wildlife Research Center on eggs submitted by New Jersey indicate that DDT levels are decreasing.

"It looks like the osprey is on the way back up," McLain says. "Mosquito spraying of long-term pesticides was stopped about six years ago, and research shows that DDT levels are going down. I think we may continue the egg transplant program for one or two more years, and then rely on the bird to do the rest."

Peregrine Falcons Hacked

Hacking of the captive-bred peregrines in New Jersey is part of an experiment being conducted by Dr. Tom Cade of the Peregrine Fund at Cornell University. Birds are being released in Colorado, Massachusetts, New York, New Hampshire, Pennsylvania, and Maryland, as well as New Jersey, primarily in an effort to reintroduce the falcon as a nesting species east of the Mississippi, where it has not reproduced successfully in the last 25 years. (See the July 1976 issue of the BULLETIN.)

Last year, seven birds were fledged off in New Jersey and twelve have been hacked this year from three hacking stations.

The first-year mortality for young peregrines is generally as high as 70 percent, and takes the survivors two to three years to sexually mature and join into nesting pairs. Consequently, it takes several years to reliably determine whether or not the peregrine falcon can be reestablished in a particular area. At the present time, two or possibly three falcons have been established at the hacking stations in New Jersey.

With the return of the first birds this year from the 1975-76 releases, McLain says "we feel the project is doing much better than expected."

Other ES Programs

Cooperative research studies have been set up by McLain with universities for work on the bog turtle (*Clemmys mühlenbergi*), pine barrens tree frog (*Hyla andersonii*), timber rattlesnake (*Crotalus horridus*), corn snake (*Elaphe guttata*), pine snake (*Pituophis melanoleucus*), blue-spotted salamander (*Ambystoma laterale*), and

(continued on page 4)

Threatened Status Proposed for Minnesota Wolf Population

Reclassification of the wolf (*Canus lupus*) population in Minnesota from Endangered to Threatened status has been proposed by the Service, along with the designation of northern areas of the State and Isle Royale National Park, Mich., as Critical Habitat for the wolf under the provisions of the Endangered Species Act of 1973 (F.R. 6/9/77).

Special regulations accompanying the change in classification would authorize the regulated control of wolves that prey upon lawfully present livestock and other domestic animals in certain areas of the State.

The Minnesota Department of Natural Resources had petitioned to have the State's estimated 1,200 wolves, the only significant population of the species remaining south of the Canadian border, removed from the list of Endangered and Threatened wildlife altogether. Some residents of the State have been concerned that the wolf—apparently increasing in numbers in some areas—has been ranging into settled areas.

Wolves have been completely protected since being listed as Endangered in 1967 under 1966 Endangered species legislation (which did not provide for a Threatened classification). But because of reported predation, many wolves have been illegally shot and trapped in recent years in the State.

The proposed rulemaking generally accepts recommendations set forth by the Eastern Timber Wolf Recovery Team (see the March 1977 issue of the BULLETIN) to manage the wolf according to five habitat zones in Minnesota. Zones 1, 2, and 3, totaling nearly 10,000 square miles of wilderness adjacent to the Canadian border and constituting the primary range of the wolf, have been proposed for designation as Critical Habitat. In zone 1, the wolf would remain completely protected. Wolves making significant depredations on domestic livestock in zones 2 and 3 could be taken by authorized agents. (Few wolves would be taken in these zones, however, because there is almost no livestock in this part of the State.)

In evaluating zone 4—a 21,000-square-mile settled area peripheral to the primary range of the wolf—the Service ruled against a recovery team recommendation that a limited hunting and trapping season be allowed for the taking of 100 wolves a year. Instead, the Service has proposed that the taking of wolves be done only by authorized Federal and State agents and only in response to specific, confirmed complaints of depredation on livestock or domestic animals. At present, Service officials see "no justification" for allowing the take of non-depredating

wolves. However, they have stated that this policy could change if future events warrant revision of the special regulations.

The Service feels the effect of the Zone 4 regulation it has proposed will be to control predation, reduce conflicts with human activities, and "create a more favorable public attitude that would be of overall benefit to the wolf." Similar controls would be exerted over any wolves that wander into the more populated zone 5 covering the western and southern portions of the State. However, wolves are not known to frequent this zone.

Endangered Wolves

The proposed rulemaking would list all other gray wolf populations below the Canadian border as Endangered. These populations include about 40 wolves on Isle Royale National Park in Lake Superior, a few possibly remaining in northern Michigan and Wisconsin, a small group in the northern Rocky Mountains, and about 200 wolves in northern Mexico.

In view of the fact that so few wolves exist below the Canadian border, the Service proposes to simplify and update the system of classification under the Endangered Species Act by deleting all subspecific names and listing the wolves simply as *Canis lupus*. Comments on the proposal are due by August 8, 1977.

New Jersey (continued from page 3)

tiger salamander (*Ambystroma tigrinum*). The unit is also doing research on two other raptors, the southern bald eagle (*Haliaeetus leucocephalus leucocephalus*) and Cooper's hawk (*Accipiter cooperi*).

Six species of whales and four species of sea turtles listed for Federal protection are being studied by a marine mammalogist and a herpetologist.

The New Jersey Division of Fish, Game and Shellfisheries has recently become the first State fish and game agency to receive funds from the National Audubon Society solely for Endangered species research. McLain says the \$1,500 grant would be matched with Federal Endangered Species grant-in-aid funds, providing \$4,500 for research on the State's endangered reptiles and amphibians.

Nongame Studies

The islands and wetlands of New Jersey's estuaries are being inventoried for colonies of nesting terns, herons, gulls, black skimmers, and other

colonial nesting birds. The surveys are concerned with human interference on the estuarine environment, bird populations and nesting densities, and vegetational types. The completed studies will serve as management tools for advising the U.S. Army Corps of Engineers and other Federal and State

agencies with regard to permissible dredging and spoil disposal areas.

The Nongame Section has developed a mobile exhibit for schools and nature centers and a backyard bird program. It also reviews and issues all permits for collecting, bird banding, rehabilitation and other activities.

Exotic Wildlife Section

Regulations have been revised so that the Exotic Wildlife Section now has permit authority over zoos, animal importers and exporters, circuses, animal holding areas, and private individuals for possessing exotic and dangerous pets. A conservation officer has been assigned fulltime, and he already has made several arrests for illegal possession of ocelots, bog turtles, wolves, lions, and other animals.

One case involved a man who had shot and stuffed one of the first peregrine falcons released in 1975. When seized, the stuffed bird still bore its leg bands and a small radio transmitter on its tail feathers used for tracking fledglings. Within the past month, this man has been successfully prosecuted.



New Jersey Department of Environmental Protection photo
A peregrine falcon hacked in 1975 has returned to tower nest near New Jersey's Barnegat Light

Plants (continued from page 1)

botanical or horticultural exhibition, educational purposes, or other activities. Seeds from cultivation are exempt.

Permit Criteria

Application requirements and the conditions and duration of permits will vary according to whether the specimens involved are wild plants, seeds or cultivated plants, or herbarium (museum) specimens.

Generally, the amount of information required to obtain a permit for wild plants is greater than for seeds, cultivated plants, or herbarium specimens. For the latter three classes, the regulations provide minimal controls to ensure that permitted activities will not adversely affect the status of plants in the wild.

Look-Alike Provision

The regulations simplify the language of the similarity-of-appearance provision and extend it to apply to plants. Under the provision, non-jeopardized wildlife and plants may be treated as Endangered or Threatened if the Service determines that such treatment would enhance the protection of an Endangered or Threatened species. In such an event, the non-Endangered species would be subject to the same permit restrictions as its "look-alike."

Legal Background

Unlike wildlife species, which by law are under the control of States or the Federal government, plant species by legal tradition usually belong to the landowner. Accordingly, the Endangered Species Act of 1973 does not prohibit the "taking" of any Endangered or Threatened plant by a private individual. Nor does the act affect the intrastate sale or shipment of protected plants. Some States, however, do regulate intrastate and interstate commerce in their native plants.

The Federal regulations, which were proposed on June 7, 1976, were developed in accordance with stipulations in the Federal law calling for the protection of Endangered plants. The 1973 act directed the Smithsonian Institution to review the status of plants that were then thought to be, or that could become, Endangered or Threatened. This review resulted in a Service proposal (F.R. 6/16/76) to list 1,783 U.S. plants as Endangered species.

Earlier, the Service had proposed that the 88 foreign plants listed under Appendix I to the Convention on International Trade in Endangered Species of Wild Fauna and Flora be protected as Endangered species (F.R. 9/26/75).

Authority for promulgation of these new regulations on interstate and foreign commerce in imperiled plants is provided for in sections 4 and 9 of the Endangered Species Act. In addition, protection is also provided under section 7 of the law, which mandates all Federal agencies to ensure that any actions authorized, funded or carried out by them do not jeopardize the continued existence of an Endangered or Threatened species, or result in the destruction or adverse modification of its Critical Habitat. Thus, a Federal "taking" that jeopardizes the plant species is prohibited.

Response to Comments

The final regulations embody a number of changes suggested by individuals and organizations commenting on the proposed regulations. More than 100 comments were received, as well as the opinions and concerns expressed by witnesses at a series of four public hearings (see the September 1976 issue of the BULLETIN).

In reviewing the comments, the Service found the major concerns were that the proposed regulations did not adequately reflect the difference between animal and plant biology, and that their adoption would impose a hardship on businesses dealing primarily in cultivated specimens of Endangered and Threatened plants.

The pertinent significant difference is the generally greater ease of plant reproduction, both naturally and artificially. In particular, seeds are often produced in considerable numbers beyond the immediate needs of the species or its ecosystem. Accordingly, the regulations were modified to provide less restrictive requirements for obtaining a permit involving only seeds of Endangered plants, with no permit being required for transactions involving the seeds of cultivated Threatened species (if "cultivated origin" is indicated on the seed packet).

The regulations recognize that the horticultural field offers a wide range of techniques for germinating seeds, cultivating seedlings, and maintaining mature plants. In addition, many techniques are now available for artificially propagating plants (such as layering, cuttings, grafting, and tissue culture) that can make possible the production of hundreds of uniform plants from a single specimen. Such activities generally have no adverse effect on the survival of species in the wild—and, in fact, in some cases serve as an adequate genetic reservoir for reintroduction to the wild of species needing restorative management.

Consequently, the final regulations provide for only minimal monitoring of horticultural activities. The application

requirements are also minimal when dealing strictly with herbarium specimens. This approach parallels the regulations in the Convention, which exempt artificially propagated plants and herbarium specimens from the usual permit requirements by more readily obtained certificates, and do not normally regulate seeds of Appendix II and III plants.

To obtain copies of the new regulations or to apply for a permit, contact the Federal Wildlife Permit Office, U.S. Fish and Wildlife Service, Washington, D.C. 20240 (telephone: 202/634-1496).

New Publications

Reports are now available describing rare and endangered plants in the States of Michigan and Kansas.

The Technical Advisory Committee for Plants of the Michigan Department of Natural Resources' Program on Endangered and Threatened Species has published a list of 328 taxa of pteridophytes, monocotyledons, and dicotyledons, of which 16 are designated as endangered, 197 threatened, 90 rare, and 25 probably extinct. The list, reprinted from an article in the *Michigan Botanist* and entitled "Endangered, Threatened, and Rare Vascular Plants in Michigan," may be obtained from Dr. Sylvia M. Taylor, Wildlife Division, Department of Natural Resources, Box 30028, Lansing, Mich. 48909.

Rare Native Vascular Plants of Kansas, by Ronald L. McGregor, has been published by the State Biological Survey of Kansas. For copies write to State Biological Survey of Kansas, 2045 Avenue A, Campus West, Lawrence, Kansas 66044.

The *Proceedings of the Conference on Endangered Plants in the Southwest*, sponsored by the Forest Service, U.S. Department of Agriculture, are now available. For copies, write: Dave Olson, U.S.D.A. Forest Service, Southeastern Forest Experimentation Station, Asheville, N.C.

A new bi-monthly newsletter devoted to native plant conservation, *Fleuritage*, is available for \$3.00 a year from the New England Wild Flower Society, Inc., Hemenway Rd., Framingham, Mass. 01701.

Reference Note

All Service notices and proposed and final rulemakings are published in the *Federal Register* in full detail. The parenthetical references given in the BULLETIN—e.g., (F.R. 5/3/77)—list the month, day, and year that the notice or rulemaking was published in the *Federal Register*.

Pending Rulemakings, Notices of Review

The Service expects to issue rulemakings and notices of review on the subjects listed below during the next 90 days. The status or action being considered for each final and proposed rulemaking is given in parentheses.

The decision on each final rulemaking will depend upon completion of the analysis of comments received and/or new data made available, with the understanding that such analysis may result in modification of the content or timing of the original proposal, or the rendering of a negative decision.

Pending Final Rulemakings

- Bald eagle (modification of status in Lower 48 States)
- Leopard darter (Threatened and Critical Habitat)
- Slackwater darter, Alabama cavefish, spotfin chub, slender chub, and yellowfin madtom (Threatened and Critical Habitat)
- 26 snails (Endangered and Threatened)
- 6 butterflies (Critical Habitat)
- Contra Costa wallflower and Antioch Dunes evening primrose (Critical Habitat)
- Giant anole (Endangered)
- San Clemente Island species (Endangered)
- 14 plants (Endangered and Threatened)
- Florida Everglade kite (Critical Habitat)
- Peregrine falcon, California (Critical Habitat)
- Palila, Hawaii (Critical Habitat)
- Cape Sable sparrow, Florida (Critical Habitat)
- Dusky seaside sparrow, Florida (Critical Habitat)
- Morro Bay kangaroo rat, California (Critical Habitat)
- Mississippi sandhill crane (Critical Habitat)

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	36	227	263	2	17	19
Birds	67	144	211	1		1
Reptiles	9	46	55	1		1
Amphibians	4	9	13	1		1
Fishes	30	10	40	4		4
Snails		1	1			
Clams	22	2	24			
Crustaceans						
Insects	6		6	2		2
Plants						
Total	174	439	613	11	17	28

Number of species currently proposed: 98 animals
1850 plants (approx.)

Number of Critical Habitats proposed: 46
Number of Critical Habitats listed: 7
Number of Recovery Teams appointed: 58
Number of Recovery Plans approved: 8
Number of Cooperative Agreements signed with States: 18

June 30, 1977

Pending Proposed Rulemakings

- Ozark big-eared bat (Endangered)
- Virginia big-eared bat (Endangered)
- African elephant (similarity of appearance to Asian elephant)
- 11 beetles (Endangered and Threatened)
- Puerto Rican whip-poor-will (Critical Habitat)
- Laysan duck (Critical Habitat)
- 2 harvestmen and 1 snail (Endangered and Threatened)

Pending Notices of Review

- Status of bobcat and lynx
- Status of river otter

We Still Need Your Help

Your response to our call for information and suggestions has been most encouraging and useful, and it has played an important role in making the BULLETIN a success. Consequently, we invite you to continue sending us reports on your latest research and management activities (accompanying illustrations are also most welcome), as well as your ideas and comments about specific topics and the BULLETIN as a whole.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

Critical Habitat Defined for Last Miss. Sandhills

The Service has issued a final rulemaking that determines Critical Habitat for the estimated 40 remaining Mississippi sandhill cranes (*Grus canadensis pulla*) (F.R. 8/8/77).

The Critical Habitat consists of nearly 26,000 acres of land and water as well as airspace in Jackson County, Mississippi, which include all known breeding, summer feeding, and roosting sites of the crane, and flight paths connecting the more important sites.

Background

In its proposed rulemaking (F.R. 9/3/75), the Service identified as possible Critical Habitat a relatively large area lying between the West Pascagoula River and the Jackson-Harrison County line that corresponds roughly with the overall range of the subspecies. This same area had already been identified as Critical Habitat in an emergency rulemaking issued earlier (F.R. 6/30/75).

As delineated in the final rulemaking, however, the crane's Critical Habitat is considerably smaller than originally proposed. This reduction was based on a more thorough assessment of available biological data, particularly that provided by the Mississippi Sandhill Crane Recovery Team.

The Service determined that much of the land within the area first proposed is not used to any significant extent by the crane. As a result, the final ruling excludes certain winter feeding sites scattered over the farmlands to the north of the designated areas. Actual use of these sites by the birds varies according to the crops planted and other factors.

Although these sites are outside the Critical Habitat area, the Service points out that section 7 of the Endangered Species Act requires all Federal agencies to make sure that their actions do not jeopardize the continued existence (continued on page 2)

Strict Hunting Safeguards Ordered To Protect Mexican Duck, Whoopers

The Fish and Wildlife Service has closed the general waterfowl season to duck hunting in parts of twelve counties of Arizona, New Mexico, and Texas this fall to protect the Endangered U.S. population of the Mexican duck (*Anas diazi*).

In addition, the Service has imposed strict controls over the hunting of snow geese (*Chen hyperborea*) at the Bosque del Apache National Wildlife Refuge in New Mexico to prevent the disturbance of an experimental flock of Endangered whooping cranes (*Grus americana*) that winters at the refuge.

The two actions stem, in part, from an examination by the Service of the possible adverse effects of the 1977-78 migratory game bird hunting regulations on the Critical Habitat of seven Endangered bird species. No adverse effects were anticipated for the other five in the review: the Aleutian Canada goose (*Branta canadensis leucopareia*), Florida Everglade kite (*Rostrhamus sociabilis plumbeus*), southern bald eagle (*Haliaeetus leucocephalus leucocephalus*), American peregrine falcon (*Falco peregrinus anatum*), and the Arctic peregrine falcon (*Falco peregrinus tundrius*).

Hybridized With Mallard

In closing the duck hunting season, the Service noted that biologists estimate there are only 100 to 200 "pure" Mexican ducks in the southwestern United States, although the duck is still fairly common in Mexico, where there are an estimated 15,000 to 50,000. Protection of the U.S. population is complicated by the Mexican's duck's close similarity of appearance to the female mallard duck (*Anas platyrhynchos*), in addition to its extensive hybridization with the mallard. It is estimated there are now 1,000 Mexican-like ducks in the southwestern U.S. The hybrids are extremely difficult to distinguish from "pure" Mexican ducks and female mallards.

The identification problem, particular-
(continued on page 2)



New Mexico Dept. of Game and Fish photo



Photo by Frank Martin, Shiawassee Refuge, Mich.

Close resemblance of Mexican duck (at left) to female mallard (right photo) has brought about hunting restrictions

of Endangered species, and that this requirement applies to the cranes in terms of their winter feeding sites.

The Service noted that most of the people who commented on the original proposal appeared to be confused regarding the meaning and implications of a Critical Habitat designation. Some of them expressed concern that such a designation would automatically curtail all human activities and development within the area. Others seemed to believe that section 7 provisions applied to all parties, not just Federal agencies. Still others mistakenly thought that the Service could arbitrarily determine or change Critical Habitat boundaries on the basis of nonbiological considerations. (For an explanation of the Critical Habitat concept, see "Critical Habitat: What it is—and is Not," by Endangered Species Program Manager Keith M. Schreiner, in the August 1976 issue of the BULLETIN.)

Interchange Issue

The Mississippi sandhill crane was the subject of the first case involving an Endangered species to reach the U.S. Supreme Court (See Dec. 1976–Jan. 1977 BULLETIN). In upholding the Fifth U.S. Circuit Court of Appeals decision to

halt construction of an interchange on Interstate Highway 10, the high court acted to protect the primary range of the remaining cranes.

Service biologists point out that the interchange itself probably would not have adversely affected the cranes. However, commercial and residential development normally associated with Interstate 10 interchanges would have presented a continuing threat to the survival of this extremely rare subspecies.

Some 1,960 acres in the area of the proposed interchange have been recommended by Mississippi's Governor Clifford Finch for addition to the Mississippi Sandhill Crane National Wildlife Refuge to ensure protection of the land from developers' interests.

A decision is still pending between the State of Mississippi and the Secretary of Transportation as to final disposition of the interchange. However, should the State and the Secretary decide to proceed with construction of the originally planned interchange, and should the Secretary of the Interior concur with the final proposed location within the Critical Habitat area, the 1,960 acres identified would have to be acquired prior to construction. □

U.S. Fish and Wildlife Service Washington, D.C. 20240

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ly in the half hour before sunrise, was cited in a suit filed by the Defenders of Wildlife last year against the Fish and Wildlife Service, alleging that these hunting hours prevented the protection of Endangered and Threatened species. The United States District Court for the District of Columbia, in a decision issued March 11, 1977, advised that in the future the Service must be able to show that it was taking proper action to conserve protected species.

Areas affected by closure of duck hunting this fall include all or parts of Cochise County, Arizona; Catron, Dona Ana, Hidalgo, and Luna Counties in New Mexico; and Brewster, Culberson, El Paso, Hudspeth, Jeff Davis, Presidio, and Reeves Counties in Texas.

Whooper Protection

During the 16-day snow goose hunting season starting Nov. 12 (or possibly Nov. 19), the Service will institute a number of precautions—including a radio link between hunters in blinds and refuge observers monitoring the movements of whoopers—to prevent the cranes from being jeopardized or forced off the Bosque del Apache Refuge. The radio link will be used to advise hunters of the proximity of whoopers flying near blinds so that shooting can cease while the cranes pass over the area.

All hunters will be required to undergo a training course which will emphasize the differences between the snow goose and the whooping crane.

Approximately eight whooping cranes are expected to be wintering at or near the refuge. All have been raised by sandhill crane foster parents over the past three summers. They were hatched from eggs transplanted from the flock of whoopers which nests at Wood Buffalo National Park in the Northwest Territories, Canada, and from captives raised at the Service's Patuxent Wildlife Research Center to the nests of the sandhill cranes at Gray's Lake, Idaho, as part of an experiment to create a second flock of wild, reproducing whoopers. The experiment is being conducted jointly by the U.S. Fish and Wildlife Service and the Canadian Wildlife Service. □

New Publication

Endangered Species, A Bibliography containing more than 1,100 entries on the world's rare, endangered, and recently extinct wildlife and plants has been published by the Oklahoma Cooperative Wildlife Research Unit. It is available for \$5 per copy from: Environmental Institute, 203 Whitehurst Hall, Oklahoma State University, Stillwater, OK 74074.

ENDANGERED SPECIES SCIENTIFIC AUTHORITY

Notices—August 1977

The Endangered Species Scientific Authority (ESSA) is responsible for the biological review of applications to export or import species listed in Appendix I, and to export species listed in Appendix II, of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Notices of ESSA's findings and other actions are published in the Federal Register. Summaries of these notices are reported in the BULLETIN by month of publication.

Export Restrictions Placed On Bobcat, Lynx, Otter, Ginseng

The Endangered Species Scientific Authority (ESSA) has issued a preliminary finding disapproving of the international export of bobcat (*Lynx rufus*) and lynx (*Lynx canadensis*) pelts from the United States taken on or after August 30, 1977.

In addition, ESSA announced it would approve only limited international export of river otter (*Lutra canadensis*) pelts from 17 States, and would allow export of the American ginseng (*Panax quinquefolius*) roots that have been collected only in Michigan (F.R. 8/30/77).

The three animal and one plant species are all listed under Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Appendix II species are considered not now threatened with extinction but may become so unless their trade is strictly regulated.

Lack of Data Cited

In issuing its preliminary findings, ESSA noted that a state-by-state analysis revealed that information on the actual biological status of the four species was far from adequate to support an opinion allowing continued unrestricted export. It was primarily a lack of data rather than positive evidence of declining populations that prompted the negative findings, the agency said. The notice added:

"The ESSA strongly encourages the States to establish and enforce biologically justifiable limits on the harvest of these species, and to require tagging of every pelt, and issue documentation on all American ginseng taken in the State. Although in certain instances the ESSA may accept less than this for international export in 1977-78, it is unlikely that less will be accepted in 1978-79. Implementation of these requirements is a

vital component of the Federal-State cooperation essential to the success of the convention."

Ginseng Popularity

Approximately 65,000 pounds of wild ginseng roots were exported from the U.S. in 1975-76, primarily to the Orient, where they are used as an aphrodisiac and a general medicine. Although the plant is cultivated, wild ginseng fetches about double the price, or around \$100 per pound wholesale.

The roots, which are brewed into a tea, also have gained popularity among U.S. health food faddists. As a result, the plant has been extremely depleted by overharvest in many States. ESSA said export of ginseng roots was approved only for Michigan because the State had recently instituted a regulatory program to prevent overexploitation. Such conservation measures are lacking in other States.

Comments are invited on the preliminary finding and are due by October 31, 1977. They should be addressed to: Executive Director, Endangered Species

12 Dealers Indicted for Illegal Trade in Reptiles

A Philadelphia grand jury indicted 12 wild animal dealers August 4 on charges of supplying eight American zoos with a variety of reptiles illegally imported from abroad in 1973 and 1974.

The indictments charge the defendants with violations of the Lacey Act, certain sections of the Endangered Species Act, and U.S. Customs laws. The charges stem from the discovery in May 1975 of a cache of 75 Australian and New Guinean lizards, tortoises, and snakes buried near Medford, N.J.

A subsequent investigation uncovered a worldwide network of illegal trafficking in reptiles, including many listed on Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora and one Nile crocodile listed under the Endangered Species Act.

Zoos alleged to have received the illegally imported specimens are: the National Zoological Park, Washington, D.C.; the Philadelphia Zoo; St. Louis Zoo; the Overton Park Zoo in Memphis, Tenn.; Sacramento Zoo; Knoxville Zoo; Dallas Zoo; and the Seneca Park Zoo in Rochester, N.Y.

Scientific Authority, 18th and C Streets, N.W., Washington, D.C. 20240. ESSA intends to publish a revised finding after review of the comments.

High Prices For Pelts

The ESSA survey indicated that the demand for bobcat pelts is growing and the total annual harvest in the U.S. now exceeds 100,000 with most going into the export market. In recent years, the wholesale price of pelts has skyrocketed and now stands at \$90-\$100 per pelt.

Precise data was lacking on the lynx population, which is subject to cyclic changes in response to the density of its major prey, the snowshoe hare (*Lepus americanus*). ESSA said most lynx pelts are exported from Alaska, where approximately 2,000 were harvested in 1976-77. The price per pelt averaged \$350.

While little population data was available on the river otter, ESSA's survey found that the take has been fairly consistent in some States over recent years and that the animal appears to be more closely managed than the cats. On this basis, ESSA is approving the export of limited numbers of otter pelts from Alaska, Delaware, Georgia, Louisiana, Maine, Maryland, Massachusetts, Michigan, Montana, New Hampshire, New York, North Carolina, Oregon, South Carolina, Virginia, Washington, and Wisconsin. □

Appendix I Import Policy

The Endangered Species Scientific Authority (ESSA) has announced its import policy for species listed under Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (F.R. 8/22/77).

ESSA said it will generally approve the import of Appendix I animals and plants for "essential" scientific research which is not detrimental to the species, or for purposes that would enhance the propagation or survival of the species.

The agency said it would consider research to be essential "only if no alternative species are available and the number of specimens proposed is the minimum that will produce acceptable scientific results." Import of salvaged specimens will be allowed for any bona fide scientific use, providing that use does not contribute to the death of the specimen or its removal from the wild.

Import for other purposes, including amateur collecting, falconry, and trophies, will be disapproved unless clear and convincing evidence establishes that allowing import will benefit the affected populations.

Comments on the policy are due by October 24. □

Rulemaking Actions—August 1977



U.S. Navy photo

U.S. Navy's Naval Ocean Systems Center occupies one end of 21-mile long San Clemente Island off California Coast.

Ecosystem Preservation

Seven of San Clemente Island's Endemic Animals, Plants Listed

In a landmark final rulemaking covering seven San Clemente Island species, the Service has acted to further the preservation of an entire ecosystem and has added the first plants to the U.S. List of Endangered and Threatened Wildlife and Plants (F.R. 8/11/77). The ruling became effective on September 12.

One of the Santa Barbara Islands off the coast of southern California, San Clemente Island has been termed the most biologically distinctive coastal island owned by the United States. Its life forms evolved independent of those on the mainland, and many of its species and subspecies do not occur anywhere else. In past years, the island habitat has been severely modified as a result of man's activities (principally the accidental and intentional introduction of other species), and the island's endemic plants and animals have been seriously threatened.

Consequently, the Service has designated one bird and four plants as Endangered and one bird and one lizard as Threatened on the island. Endangered status has been given to the

- San Clemente loggerhead shrike (*Lanius ludovicianus mearnsi*)
- San Clemente broom (*Lotus scoparius* ssp. *traskiae*)
- San Clemente Island bushmallow (*Malacothamnus clementinus*)
- San Clemente Island larkspur (*Delphinium kinkiense*)
- San Clemente Island Indian paintbrush (*Castilleja grisea*)

The Threatened animals are the

- San Clemente sage sparrow (*Amphispiza belli clementae*)
- island night lizard (*Klauberina riversiana*)

Background

On June 1, 1976, the Service issued a proposed rulemaking in the *Federal Register*, in which Endangered status was considered for seven animals endemic to San Clemente Island. Subsequently, the Service included four San Clemente plants—among more than 1,700 U.S. plants proposed for Endangered status (F.R. 6/16/76).

The Service did not receive any comments directly related to the proposed listing of the four plants, but it did receive a total of 14 responses on the animals from various individuals and institutions, including the California State Department of Fish and Game (responding for the Governor), the U.S. Navy (which now has jurisdiction over the island), and several conservation organizations.

None of these respondents argued against the proposal in its entirety; in fact, most were in favor of it, with the remainder being noncommittal.

After analyzing these responses, the Service modified its original proposal. The key modifications were as follows:

- The proposed status of the San Clemente sage sparrow was changed from Endangered to Threatened on the grounds that the current population of between 200 and 400 pairs of birds is not likely to become extinct in the near future.
- Similarly, it was determined that the island night lizard had a large enough population to warrant Threatened rather than Endangered status.
- The views of the State of California and the U.S. Navy that population levels of three snails proposed as Endangered were high enough to exempt the species from either Endangered or Threatened status were accepted by the Service.
- Endangered listing of the San Clemente coenonycha beetle was omitted from the final ruling on a recommendation from the U.S. Navy and the State of California that insufficient data are presently available on the insect to warrant its listing. Nevertheless, the beetle will remain as proposed until a status survey has been conducted.

American Peregrine Falcon

The Service has issued a final rule-making determining Critical Habitat for the American peregrine falcon (*Falco peregrinus anatum*), an Endangered subspecies of falcon (F.R. 8/11/77). The ruling took effect on August 11.

The designated area consists of three zones in the coastal mountains of northern California. These zones, in Lake, Sonoma, and Napa Counties, all contain many excellent nesting sites and either have or are adjacent to areas of high concentrations of passerine birds that are prey for the falcon.

As published in the *Federal Register* on August 30, 1976 (see the September 1976 BULLETIN), the original proposal included a fourth zone, the Cobb Mountain Zone. The Service's decision to exclude this zone from the final ruling was based on recommendations of the U.S. Energy Research and Development Administration, California State Lands Commission, several private companies, and Kenneth E. Stager of the Los Angeles County Museum of Natural History. Extensive research by Stager and others indicates that the zone has not been a nesting area for the falcon for more than 40 years.



U.S. Navy photo

Large female island night lizard has typical spotted pattern on scales. The species is listed as Threatened on San Clemente



U.S. Navy photo

San Clemente Island bushmallow has been reduced to only two known locations of seven or eight tightly clustered plants

The original proposal was supported in its entirety by the California Department of Fish and Game, the Ecology Center of Southern California, the Napa County board of supervisors, several conservation organizations, and two private citizens. No comments were received voicing major opposition to the proposal.

The California state director of Interior's Bureau of Land Management has

recommended that one zone be enlarged; the Service still has this recommendation under consideration.

The Service continues to emphasize that the areas currently designated as Critical Habitat represent only small segments of what may be the overall habitat that is critical to the survival of the American peregrine falcon, and that additional areas may be proposed in the near future.

Morro Bay Kangaroo Rat

An area along the south side of Morro Bay, in San Luis Obispo County, California, has been designated as Critical Habitat for the Morro Bay kangaroo rat (*Dipodomys heermanni morroensis*), an Endangered rodent, in a final ruling issued by the Service (F.R. 8/11/77). The ruling became effective on August 11.

The designated area is the same as that described in the original proposal as published in the August 30, 1976, issue of the *Federal Register* (see the September 1976 BULLETIN). The Service received no comments in opposition to the proposal.

Palila

To further protection of the palila (*Psittirostra bairdii*), an Endangered member of the Hawaiian honeycreeper family, the Service has issued a final rulemaking, effective immediately, designating the bird's range as Critical Habitat (F.R. 8/11/77).

The bird's range consists of forests of mamane and naio on the slopes of Mauna Kea on the island of Hawaii.

The final ruling is basically the same as the proposed rulemaking published in the December 22, 1976, issue of the *Federal Register* (see the December 1976-January 1977 BULLETIN). The final ruling also specifies an upper elevation limit of 10,000 feet, as part of the palila's Critical Habitat.

Comments received by the Service on the original proposal included supportive letters from the Governor of Hawaii, the State Forester of Hawaii, the U.S. Forest Service, the Golden Gate Audubon Society and other organizations.

Cape Sable Sparrow

The Service has issued a final rulemaking that determines Critical Habitat for the Cape Sable sparrow (*Ammodramus maritimus mirabilis*), an Endangered songbird found only in southern Florida (F.R. 8/11/77). The ruling became effective on August 11.

Critical Habitat for the species consists of areas of land, water, and airspace in the Taylor Slough region, which lies within Collier, Dade, and Monroe Counties. These areas contain the largest known concentration of the species, and are the only areas currently known to support a major viable population.

The final Critical Habitat determination for the species differs somewhat from that described in the original proposal, as published in the August 30, 1976, issue of the *Federal Register* (see the August 1976 BULLETIN). Certain areas have been deleted and others added, based principally on recommendations of the National Park Service.

The Environmental Defense Fund, New York Zoological Society, Smithsonian Institution, and three private citizens expressed their support for the original proposal. No opposing comments were received.

Dusky Seaside Sparrow

In a final ruling, effective immediately, the Service has designated two areas in Brevard County, Florida, as Critical Habitat for the dusky seaside sparrow (*Ammodramus maritimus nigrescens*), an Endangered species (F.R. 8/11/77).

The two areas, both near Titusville, are the same as those indicated in the original ruling proposed in the December 3, 1976, issue of the *Federal Register* (see the December 1976-January 1977 BULLETIN). Comments received on the proposal included letters of support from the Florida Game and Fresh Water Fish Commission, several conservation organizations, and two private citizens. There were no adverse comments received.

Florida Everglade Kite

Critical Habitat has been determined for the Florida Everglade kite (*Rostrhamus sociabilis plumbeus*), an Endangered subspecies, in a final ruling issued by the Service that is effective immediately (F.R. 8/11/77).

The designated habitat consists of several areas lying west and north of Miami that constitute the best and largest remaining stretches of habitat suitable for the kite. These areas were identified in the original proposal as published in the *Federal Register* on December 3, 1976 (see the December 1976-January 1977 BULLETIN).

The Service received supportive letters on the proposal from the Florida Game and Fresh Water Fish Commission, several conservation organizations, and two individuals. In addition, the Central and Southern Florida Flood Control District recommended the addition of certain areas; the Service still has this suggestion under consideration.

The National Park Service recommended omitting any part of Everglades National Park from the Critical Habitat designation because the park area currently is not known to be used regularly by the kite. However, Service biologists concluded that even limited use of the park is of importance in the case of such a rare bird, and that the park would be of great value to an expanding kite population.

Tan Riffle Shell

The Service has issued a final rulemaking that determines the tan riffle shell (*Epioblasma walkeri*) to be an

Endangered species (F.R. 8/23/77). This ruling takes effect on September 26, 1977.

The tan riffle shell is a pearly mussel that characteristically inhabits riffle areas in medium- to large-sized streams. Formerly occurring rather generally in both the Tennessee and Cumberland river systems, the species now has only a limited range: The lower Red River of the Cumberland river system in Kentucky and Tennessee; the middle fork of the Holston River in Virginia; the Duck River in Tennessee from Wilholte Mill downstream to Columbia; and the Clinch River in Virginia and Tennessee, where it is very rare. It may also still occur in the Stones River in Tennessee, although such a finding would be very rare.

Principal Threats

The Service has determined that the tan riffle shell is in danger of extinction in all or a major part of its present range. The species is endangered primarily by water pollution, channelization, and dam construction.

Because of its large oxygen need, the species is very vulnerable to contaminants. The streams within its range have been subject to accidental spills of fly ash and sulfuric acid, the dumping of untreated packing plant effluent and municipal wastes, and other forms of pollution.

Channelization of the upper Clinch River and construction of the Columbia Dam on the Duck River also are a major threat, because the species requires a voluminous and rapid flow of water.

In addition, over the last two decades, the tan riffle shell has been displaced in some areas within the Tennessee river system by an introduced species, the Asian clam (*Corbicula manilensis*).

Although trade in the tan riffle shell is insignificant compared with that involving thick-shelled mussel species, commerce has nevertheless had a measurable impact on this species.

The tan riffle shell is listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. However, such listing provides protection only against international trade and does not apply to domestic trade. There are no other existing regulations that afford protection to this species. Consequently, the Service has determined that this mussel's status warrants its protection under the Endangered Species Act of 1973.

The final rulemaking is basically the same as the proposed rulemaking published in the *Federal Register* on September 26, 1975.

In response to this proposal, the Service received comments from three States and one individual.

(continued on page 7)

David H. Stansbery of the Museum of Zoology of The Ohio State University provided a detailed report on the species, summarizing the synonymy, taxonomic status, diagnostic characteristics, distribution patterns, and threats.

STATUS REVIEWS

American Ginseng

The status of the American ginseng (*Panax quinquefolius*) is to be reviewed to determine whether or not the plant should be listed as Endangered or Threatened (F.R. 8/11/77).

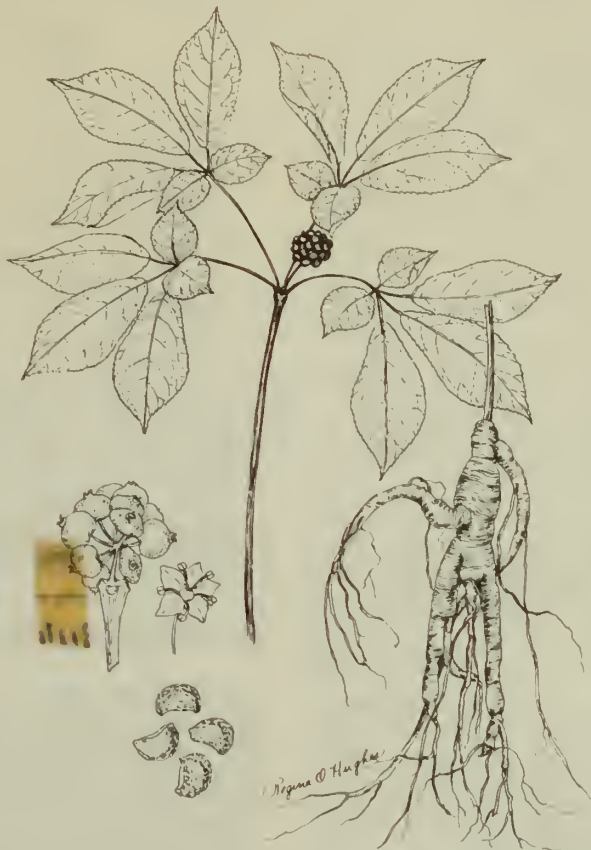
The American ginseng has been observed in the wild in at least 32 States (all in the eastern half of the United States), as well as in the Provinces of Quebec, Ontario, and Manitoba, Canada. In some areas, ginseng has been severely depleted in the wild as a result of both overcollecting and habitat modification. (See related story on page 3.)

The American ginseng currently is listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Although this treaty does provide for control over export of American ginseng, it does not contain specific provisions for conservation of the plant in the wild. Most U.S. States do not have such provisions, nor do they have uniform controls for the harvesting of the plant in the wild. Consequently, the Service believes that it is important to determine whether or not the plant qualifies for protection under the Endangered Species Act of 1973.

Meanwhile, the plant is already included in numerous State lists of endangered, threatened, and rare plants. Furthermore, it is included in the Smithsonian Institution's compilation entitled "Endangered and Threatened Plants of the United States."

In addition to inviting responses from any interested parties, the Service is seeking the views of the Governors of the States where the plant is known to be found, as well as the Government of Canada. All comments are due by October 11, 1977.

Comments received will be used by the Service to determine the proposed status of the plant. In addition, the information will be used by the Endangered Species Scientific Authority (ESSA), in developing its findings concerning exports of American ginseng that have been obtained from the wild. It is emphasized that this is a status review and not a proposed rulemaking.



U.S. Department of Agriculture drawing

American ginseng is subject of trade restrictions and is listed for status review. Drawings show branch, root, seeds, berries, and flower of the plant which is becoming severely depleted in the wild

10 AMPHIBIANS LISTED FOR REVIEW

The Service has announced that it will review the status of 10 species of amphibians to determine whether any of them should be proposed for listing as Endangered or Threatened species (F.R. 8/2/77).

Comments should be submitted to the Service by November 1, 1977. The Service would like to obtain the views of the Governors of the ten States and one Territory where the amphibians are known to occur. Responses are also invited from any other interested parties.

The amphibians to be reviewed are listed in the table below.

Common Name	Scientific Name	Distribution
Puerto Rican toad	<i>Bufo lemur</i>	Puerto Rico
Amargosa toad	<i>Bufo nelsoni</i>	Nevada
Pine Barrens treefrog	<i>Hyla andersonii</i>	New Jersey, North Carolina, South Carolina
Vegas Valley leopard frog	<i>Rana onca</i>	Arizona, Nevada, Utah
Neuse River waterdog	<i>Necturus lewisi</i>	North Carolina
San Marcos salamander	<i>Eurycea nana</i>	Texas
Valdina Farms salamander	<i>Eurycea troglodytes</i>	Texas
Larch Mountain salamander	<i>Plethodon larselli</i>	Oregon, Washington
Siskiyou Mountain salamander	<i>Plethodon stormi</i>	California, Oregon
Honey Creek Cave blind salamander	<i>Typhlomolge tridentifera</i>	Texas

20 Appendix I Species

The Service plans to determine whether or not Endangered or Threatened status should be proposed for any of 20 species listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (F.R. 8/11/77).

These species are the only ones not currently recognized as Endangered by the United States of the 46 animal taxa added to Appendix I at the Berne Conference in November 1976 (see the December 1976-January 1977 BULLETIN).

The 20 species are as follows:

- Asiatic black bear (*Selenarctos thibetanus gedrosianus*)
- Spectacled bear (*Tremarctos ornatus*)
- Chinchillas (*Chinchilla* ssp.)
- Bush dog (*Speothos venaticus*)
- Buff-headed marmoset (*Callithrix flaviceps*)
- Pygmy marmoset (*Cebuella pygmaea*)
- White-eared marmoset (*Callithrix aurita*)
- European otter (*Lutra lutra*)
- Black rhinoceros (*Diceros bicornis*)
- Southern white rhinoceros (*Ceratotherium simum simum*)
- Imperial eagle (*Aquila heliaca*)
- White-tailed eagle (*Haliaeetus albicilla*)
- Peregrine falcon (*Falco peregrinus*)
- Aldabra kestrel (*Falco newtoni alabranus*)
- Mad boas (*Acantophis* ssp.)
- Round Island boas (*Bolyeria* ssp.)
- Round Island boas (*Caserea* ssp.)
- Tree boa (*Sanzivia madagascariensis*)
- Dwarf crocodile (*Osteolaemus tetraspis*)
- Mugger crocodile (*Crocodylus palustris*)

As required by the Endangered Species Act of 1973, the Service is consulting with the foreign countries in which the 20 species are resident.

Comments are due by January 1, 1978.

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	36	227	263	2	17	19
Birds	68	144	212	2		2
Reptiles	10	46	56	2		2
Amphibians	4	9	13	1		1
Fishes	30	10	40	4		4
Snails		1	1			
Clams	23	2	25			
Crustaceans						
Insects	6		6	2		2
Plants	4		4			
Total	181	439	620	13	17	30

Number of species currently proposed: 99 animals
1846 plants (approx.)

Number of Critical Habitats proposed: 38

Number of Critical Habitats listed: 15

Number of Recovery Teams appointed: 59

Number of Recovery Plans approved: 9

Number of Cooperative Agreements signed with States: 19 August 31, 1977

Pending Rulemakings

The Service expects to issue rulemakings and notices of review on the subjects listed below during the next 90 days. The status or action being considered for each final and proposed rulemaking is given in parentheses.

The decision on each final rulemaking will depend upon completion of the analysis of comments received and/or new data made available, with the understanding that such analysis may result in modification of the content or timing of the original proposal, or the rendering of a negative decision.

Pending Final Rulemakings*

- Bald eagle (modification of status in Lower 48 States)
- Leopard darter (T, C.H.)
- 27 snails (E, T)
- 6 butterfiles (C.H.)
- Contra Costa wallflower and Antioch Dunes evening primrose (C.H.)
- 13 plants (E, T)
- Grizzly bear (C.H.)
- Gray wolf (reclassification to T in Minn.; C.H.)

- 5 Southeastern U.S. fishes (T, C.H.)
- Florida pine barrens treefrog (E, C.H.)
- Golden coqui (T, C.H.)
- 15 crustaceans (E, T)
- Whooping crane (C.H.)
- Black toad (T, C.H.)

Pending proposed rulemakings*

- Ozark big-eared bat (E)
- Virginia big-eared bat (E)
- African elephant (S.O.A. to Asian elephant)
- 11 beetles (E, T)
- Puerto Rican whip-poor-will (C.H.)
- Laysan duck (C.H.)
- 2 harvestmen (E, T)
- Little Kern golden trout (T, C.H.)
- 3 mussels (C.H.)
- Rocky Mountain peregrine falcon population (C.H.)
- 29 Southeastern U.S. fishes (E, T)
- Humpback chub (C.H.)
- Colorado squawfish (C.H.)
- Woundfin (C.H.)
- Greenback cutthroat trout (reclassification to T)
- Virgin River chub (E, C.H.)

* Abbreviations: E=Endangered, T=Threatened, C.H.=Critical Habitat, S.O.A.=Similarity of Appearance.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

A Guide to Endangered Species Regulations

In this issue, the BULLETIN presents "A Guide to Endangered Species Regulations"—a special feature designed to enhance understanding of the regulations now in force to protect imperiled animals and plants at home and abroad. The guide covers all the requirements of both the Endangered Species Act of 1973 and U.S. regulations carrying out the Convention on International Trade in Endangered Species of Wild Fauna and Flora. The guide starts on page 3.

FWS, NMFS Divide Sea Turtle Duties

The Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) have agreed by memorandum of understanding to divide program responsibilities covering sea turtles listed under the Endangered Species Act of 1973.

Henceforth, NMFS will have sole jurisdiction over sea turtles—including parts or products—when they are in a marine environment; i.e., in the oceans and seas, bays and estuaries, brackish water areas, and waters adjacent to nesting beaches. FWS will have sole jurisdiction when the turtles, including parts and products, are on land. These respective jurisdictions will apply to consultations involving compliance with the provisions of section 7 of the act.

The Federal Wildlife Permit Office of the FWS will serve as a central clearinghouse for both agencies in the processing of permit applications and certifications affecting sea turtles.

Currently, three sea turtles are listed as Endangered: the Atlantic ridley (*Lepidochelys kempii*), leatherback (*Dermochelys coriacea*), and hawksbill (*Eretmochelys imbricata*). Three others have been proposed as Threatened: the green turtle (*Chelonia mydas*), loggerhead (*Caretta caretta*), and Pacific ridley (*Lepidochelys olivacea*).

The FWS and NMFS expect soon to propose certain Virgin Islands beaches and adjacent offshore areas as Critical Habitat for the leatherback.

Greenback Cutthroat Trout Returning; Change to Threatened Status Sought

The success of Federal and State agencies in restoring the greenback cutthroat trout (*Salmo clarki stomias*) has led the Service to propose changing the fish's protection category from Endangered to Threatened (F.R. 9/26/77).

Found only in Colorado, the fish was originally listed as Endangered under the Endangered Species Act of 1969, primarily because of extensive hybridization with introduced trout species and habitat alteration throughout its range. The Service believes this species should now be reclassified to the much improved Threatened status, as biological evidence indicates that the greenback cutthroat has made a significant comeback.

Greenback cutthroat trout populations have been located or reintroduced in several stretches of water within the fish's historic range in the headstreams of the South Platte and Arkansas river systems. Furthermore, there is a successful ongoing effort to eliminate introduced trout—especially rainbow trout and other subspecies of cutthroat trout—that could hybridize with the greenback cutthroat within its

present range.

The most recent reintroduction efforts took place at Bear Lake in Rocky Mountain National Park, where native greenback cutthroats were restocked after the successful removal of introduced trout.

Nevertheless, introduction of non-native trout by fishermen continues to pose a threat to the subspecies, as does the natural destruction of barrier dams. In addition, although its habitat on public lands appears to be safe from degradation, habitat areas on private lands are still subject to the adverse effects of logging, mining, grazing, and water development projects.

While recognizing the continuing need for Federal protection as well as Critical Habitat determination for the subspecies, the Service also believes there is evidence that the greenback cutthroat trout may benefit from regulated taking through noncommercial fishing in certain areas. Accordingly, the Service has included within its proposed rulemaking a special regulation that would allow taking of the subspecies in accordance with Colorado State laws.

Comments on the proposed rulemaking are due by December 27, 1977.



U.S. Fish and Wildlife Service photo

Intensive conservation effort has enabled *Salmo clarki stomias* to make a significant comeback in Colorado

Rare Plant Data Symposium

The National Park Service and the New York Botanical Garden will sponsor a symposium in New York City November 15-17 under the title "Geographical Data Organization for Rare Plant Conservation."

Currently, a number of researchers are compiling quantities of biogeographical information on rare plants in data banks. The symposium will take up a representative selection of these diverse systems and discuss data priorities and data organization problems in various regions of the Nation. In addition, attendees will focus on the prospects for promoting information exchange and for coordinating data organization procedures among Federal, State, and regional parties.

For further information, contact Dr. Larry E. Morse, New York Botanical Garden, Bronx, New York 10458; (212-220-8658).

New Publications

The Biota of North America, Part 1: Vascular Plants, Vol. I: Rare Plants, by John T. and Rosemarie Kartesz, is now available. This volume, intended to serve as a liaison directory and compilation of information on rare plants, should also help States and North American

botanists promote and establish protective laws and species listings for these plants. (A similar volume on rare animals is now in preparation.) For more information on cost and availability, write to Mr. John T. Kartesz, Executive Director, Biota of North America Committee, 2202 Ridge Road, McKeesport, Pa. 15135.

The Arkansas Natural Heritage Commission has published a leaflet on "Arkansas Plants Nominated for Listing as Endangered." For copies, write Arkansas Natural Heritage Commission, Suite 500, Continental Bldg., Main & Markham, Little Rock, Arkansas 72201.

An *Annotated Checklist of Birds, Mammals, Reptiles and Amphibians of the Virgin Islands and Puerto Rico* has been compiled of 393 species from the seven geographic island areas by Richard Philibosian and John A. Yntema. For each listing, there is a designation of status, its breeding location, and seasonal patterns. Copies are available for \$2.00 postpaid, from Information Services, P.O. Box 305, Frederiksted, St. Croix, U.S. Virgin Islands 00840.

A summary of current knowledge on *Endangered and Threatened Plants of Idaho* has been published by the University of Idaho. For copies, contact the Forest, Wildlife and Range Experiment Station, Moscow, Idaho 83843.

ENDANGERED SPECIES SCIENTIFIC AUTHORITY

Notices—September 1977

The *Endangered Species Scientific Authority (ESSA)* is responsible for the biological review of applications to export or import species listed in Appendix I, and to export species listed in Appendix II, of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Notices of ESSA's findings and other actions are published in the Federal Register. Summaries of these notices are reported in the BULLETIN by month of publication.

Pet Imports Discouraged By ESSA Policy Decision

The Endangered Species Scientific Authority (ESSA) has disapproved an application to import a pair of protected margays (*Felis wiedii*) which an American couple had purchased at a village market in Nicaragua and wanted to donate to a zoo in the United States.

In a statement, ESSA said the permit application for the zoo did not satisfy its recently developed policy covering the import of species, such as the Nicaraguan margay, which are listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. The policy holds that imports of Appendix I animals and plants, which are threatened with extinction, generally will be allowed only for the following purposes: (1) essential scientific uses not detrimental to the survival of the species; (2) enhancement of the propagation or survival of the species; and (3) any bonafide scientific use of salvaged specimens, provided that the possibility of import neither directly nor indirectly contributed to the specimen's death or removal from the wild.

Import for other purposes will be disapproved unless the evidence establishes that import is in the best interest of the species.

Dr. William Y. Brown, executive secretary of ESSA, said people may buy wild pets while abroad because they are concerned about the well-being of the animals, not realizing that at the same time they are encouraging the collection of the animals for more sales as pets.

Reference Note

All Service notices and proposed and final rulemakings are published in the *Federal Register* in full detail. The parenthetical references given in the BULLETIN—e.g., (F.R. 5/3/77)—list the month, day, and year that the notice or rulemaking was published in the *Federal Register*.

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The *ENDANGERED SPECIES TECHNICAL BULLETIN* is published monthly by the U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

A Guide to Endangered Species Regulations

Federal and international laws and regulations are now fully in force to help ensure the continued survival of imperiled animals and plants in the United States and around the world.

Strict domestic regulations have been developed to protect jeopardized wildlife since passage of the Endangered Species Act of 1973. Regulations and permit procedures governing plants protected under the act took effect on July 25, 1977.

In May 1977, the United States published regulations to enforce the Convention on International Trade in Endangered Species of Wild Fauna and Flora. The U.S. and nearly 40 other nations are party to the Convention, which has established procedures to control and monitor the import and export of imperiled species covered by the treaty.

The Endangered Species Act and the Convention share many similarities in that the protection they provide extends to species all over the world. However, it is important to point out that these separate measures—one domestic and the other international—employ different terminology, address separate (but overlapping) lists of protected species, and, in addition, serve somewhat different purposes.

Scope of the Convention

The primary function of the international Convention is to regulate international trade in the species it protects. Its rules apply only to import, export, and reexport. The rules do not apply, as part of an international instrument, to interstate shipments, to the "taking" (killing or capture) of species, or to the preservation of habitat.

Unlike many other treaties which gather dust on library shelves, the Convention is an active and forceful agreement whose member countries meet regularly to assess and improve its effectiveness. Convention rules are implemented in each country by a permit-issuing office (a management authority), which in turn is advised by a scientific authority.

U.S. Management Authority

By delegation of the Secretary of the Interior, the Convention's management authority in this country is the Federal Wildlife Permit Office of the Fish and Wildlife Service. In addition to acting as the official U.S. spokesman on all matters relating to the international Convention and coordinating U.S. implementation, the management authority receives and issues all Convention-required permits and certificates, consulting as necessary with other Federal and State agencies.

U.S. Scientific Authority

Established by Presidential order, the scientific authority for the U.S. is an autonomous committee of representatives of six Federal agencies (including the Department of the Interior) plus the Smithsonian Institution. Called the Endangered Species Scientific Authority (ESSA), it is chaired by the chief of the Office of Endangered Species of the Fish and Wildlife Service. Other agencies represented are the Departments of Agriculture; Health, Education and Welfare; and Commerce; the National Science Foundation; and the Council on Environmental Quality.

ESSA's primary responsibility is to establish biological criteria on which to

base findings for individual species protected by the Convention, so that it may advise the management authority on the issuance of appropriate U.S. export and import permits.

Other parties to the Convention are also establishing scientific and management authorities.

Scope of Endangered Species Act

The U.S. law is broader than the Convention in its application, and applies to all jeopardized species that warrant Federal protection—including those endangered by habitat destruction and many other things, whether or not they are of value in the commercial market. The act regulates the taking and capture of all listed animals, as well as interstate and foreign commerce in both animals and plants, and provides for land acquisition and financial assistance to States and foreign countries.

The Endangered Species Act is administered by the Secretary of the Interior, acting through the Director of the Fish and Wildlife Service and with the assistance of the Service's Endangered Species Office.

In the case of marine species, actions are taken in cooperation with the Secretary of Commerce, through the Director of the National Marine Fisheries Service. Similarly, in the area of import/export enforcement for Endangered plants, Interior cooperates with and is assisted by the Department of Agriculture through the Animal and Plant Health Inspection Service.

The following guide indicates the chief differences and similarities between the 1973 act and the Convention. The listing processes, prohibitions, and permit procedures are presented side by side for comparative purposes.

Endangered Species Act Regulations

While the Convention addresses species that are (or may be) affected by trade in sufficient volume as to be a potential threat to their survival, the Endangered Species Act provides protection to any species threatened by any of the following factors:

1. The present or threatened destruction, modification, or curtailment of the species' habitat or range.
2. Overutilization for commercial, sporting, scientific, or educational purposes.
3. Disease or predation.
4. The inadequacy of existing regulatory mechanisms.
5. Other natural or man-made factors affecting its continued existence.

Two listing classifications are provided:

- **Endangered**—any species which is in danger of extinction through all or a significant portion of its range,
- **Threatened**—any species which is likely to become "Endangered" within the foreseeable future through all or a significant portion of its range.

Convention Regulations

The Convention approaches the protection of species from the standpoint of how trade (import-export) would affect the status of a particular species in the wild in its native country. The scope of the Convention extends to animals and plants, terrestrial or marine.

Generally, the destruction of habitat by human development is the major cause of the decline and extinction of animals and plants. But international trade can be an important factor in the decline of some species, if it promotes overhunting for fur or hides, for food products, for pets, for exhibition, for sport, for scientific experimentation, or for other purposes. Plants can be jeopardized by overcollecting for private or commercial purposes. When an overcollected species is imported or exported, it may be eligible for protection under the Convention.

Accordingly, the Convention recognizes that controls are essential now for many imperiled species, and that safeguards are necessary for others that could be jeopardized.

(continued on page 4)

The Listing Process

Species are added to or deleted from the list by Federal "rulemakings." A member of the public may petition for such action, or the listing process may be initiated by the Department of the Interior based on available knowledge of the species' biological status, as modified by existing or potential threats. The proposed listing, delisting, or reclassification is published in the *Federal Register*, and the public is given at least 60 days in which to comment. State governors are allowed 90 days, in the case of "resident" species. A public hearing may also be requested within 45 days after the *Federal Register* publication.

Following review of comments and evaluation of the best available biological data, a final rulemaking is then formulated by the Director of the Fish and Wildlife Service. The rulemaking will generally become official 30 days after publication of the final "determination." This process is also followed for the designation of Critical Habitat for Endangered and Threatened species. Notices of review, proposals, and final rulemakings, plus periodically updated lists of protected species, are published in the *Federal Register*.

Prohibited Activities

The act and the Convention prohibit certain activities involving protected species unless an exception applies or a permit is granted.

The Endangered Species Act places a number of restrictions on activities that can be conducted with protected species. These prohibitions include import, export, taking (except plants); if illegally taken, possession, transporting, carrying, etc.; delivery, receipt, transportation, etc., in interstate or foreign commerce in the course of a commercial activity; and sale or offer for sale in interstate or foreign commerce.

These prohibitions apply to live or dead species; to their parts or products; to all progeny of animals born on or after December 28, 1973 (effective date of the act), and to animals held at that time for sale or barter.

There is no Federal prohibition under the Endangered Species Act against the taking of Endangered or Threatened plants. However, the taking of plants is sometimes regulated by local, State, or Federal agencies under other legislation. Also, Federal responsibilities under section 7 of the act apply if taking of individual Endangered or Threatened plants would jeopardize their continued existence. Seeds of cultivated Threatened plants are exempt from regulation provided that a statement of origin accompanies them during the course of any activity otherwise subject to regulation.

The act does not affect intrastate commerce, which is under the jurisdiction of the individual States.

Bona fide gifts and standard breeding loans in interstate commerce are not considered commercial activities and are permitted. Also, Endangered species may be offered for sale, but the advertisement must include a notice that the sale is contingent upon the buyer (or seller of cultivated plants) receiving a valid permit from the Fish and Wildlife Service. One does not need a Federal Endangered species permit to possess legally acquired protected species.

Exceptions to the Rules

- A "grandfather clause" exempts listed animals held prior to enactment of the law (pre-December 28, 1973) if kept in a controlled environment for non-commercial purposes.
- Alaskan natives are allowed to use listed species for subsistence and handicraft purposes.
- Seeds of cultivated Threatened plants are exempt if their origin can be verified.
- Listed animals may be taken in defense of human life.
- Taking of a sick, injured, or dead listed animal is permitted by qualified Federal or State employees.

dized by a high demand in export-import markets. The Convention established three appendixes, or categories, of species to provide for appropriate and differing degrees of control:

- **Appendix I**—Species which are threatened with extinction and are or may be affected by trade. These species are in need of particularly strict regulation to prevent their future endangerment.
- **Appendix II**—Species which, although not now necessarily threatened with extinction, may become so unless their trade is regulated and monitored.
- **Appendix III**—Species may be placed on this Appendix by any individual Convention nation as being subject to conservation regulation within its jurisdiction, to gain the cooperation of other countries in reinforcing its conservation measures. Any nation may list a species native to its country on this Appendix without approval of the other parties to the Convention.

Listing of Species

The species listed under Appendixes I and II may be from any country in the world and are not limited to the treaty nations. Species are added to or removed from these two appendixes by international agreement.

The formal procedure in the U.S. for public input to proposed amendments to the appendixes has not yet been fully established. However, a process similar to the "rulemaking" procedure for listing species under the Endangered Species Act is now contemplated. In the meantime, U.S. proposals for amendment of the appendixes will be published in the *Federal Register*, and the public will be allowed to comment before any amendments are officially requested by the U.S. management authority. The U.S. position would then be forwarded for approval of the party nations, either by postal procedure or by majority vote at a formal conference.

Appendix I Species Permits

The Convention's most stringent controls are directed at regulating activities involving species listed in Appendix I. All shipments of such species, their parts and derivatives (including manufactured products), require two permits—one from the importing country (obtained first), and another from the exporting country.

Before a permit can be granted for import of an Appendix I species into the United States, the Endangered Species Scientific Authority must find and so advise the U.S. management authority that the purposes of importation will not be detrimental to the survival of the species in the wild. ESSA will generally approve the import of Appendix I animals and plants if for essential scientific research (not detrimental to the species) or for purposes that would enhance the propagation or survival of the species.

ESSA must also find that the recipient of a living Appendix I specimen is suitably equipped to house and care for the specimen.

The scientific authority of the exporting country must also find that the proposed transaction will not be detrimental to the survival of an Appendix I species before issuing an export permit.

Permits for Appendix I species may not be issued for purposes which are primarily commercial.

Appendix II Species Permits

The Convention's controls serve to monitor the volume of traffic in these less seriously threatened species. Export permits must be issued from the country of origin for Appendix II specimens, and may be granted for any purpose if the scientific authority advises that the import will not be detrimental to the survival of the species.

As authorized by the Convention, ESSA will monitor both the export permits and the actual export of Appendix II

ENDANGERED SPECIES ACT

- Taking of listed species by State employees operating pursuant to a State cooperative agreement with the Service is allowable for acceptable purposes.

Permit Specifications

The Endangered Species Act recognizes a limited number of legitimate purposes for obtaining permits that grant access to protected animals and plants. Under the act, the intended recipient (except in the case of cultivated plants) must submit the application, which must be for one of the following purposes:

- *Endangered Species*: Permits may be issued for scientific research and for enhancing the propagation or survival of the species. Techniques such as relocation of surplus stock, conservation exhibition, and euthanasia are acceptable for any Endangered animals already in captivity. Economic hardship permits may also be granted, but are limited to one year from the time of a notice of review or proposed listing of the species.

- *Threatened Species*: Permits may be issued for scientific research purposes; enhancing the propagation or survival of a species; zoological, horticultural, or botanical exhibition, and educational purposes; under special rules for individual species; and for exotic wildlife designated as Captive, Self-Sustaining Populations (CSSP's).

The regulations allow for taking of Endangered or Threatened species by designated employees of a State which has entered into a cooperative agreement with the Service. Such a State employee may take an Endangered species for certain acceptable conservation purposes, except under specified circumstances that would prove detrimental to the specimen's survival, for which a permit is required. Except under special rules published for the management of individual Threatened species, a State agency acting under the terms of a cooperative agreement may take a Threatened species *without a permit* to carry out scientific research or conservation programs.

The regulations also recognize that some species of animals, listed as Endangered in the wild outside of the U.S., are being successfully bred in captivity in this country. These CSSP's have been reclassified as Threatened and multiple transaction permits may be issued for their trade in interstate commerce. Permits may be issued for *any* purpose that would not be detrimental to the survival of a CSSP species, in accordance with permit provisions for Threatened species.

PERMIT APPLICATION REVIEW PROCESS

Prohibited activities under the act and the Convention may be conducted without a permit if an exception applies. However, the exceptions are exclusive to each law and cannot be used to avoid a prohibition of a different law. When a species is covered by more than one law, the requirements of each law must be met.

All Endangered species and Convention permit and certificate applications are received and initially reviewed by the Federal Wildlife Permit Office.

Notice of receipt of permit applications for all species listed solely under the act will be published in the *Federal Register* for public comment. The applications are subsequently reviewed by the Office of Endangered Species, and undergo technical review by the Division of Law Enforcement. All comments and recommendations are evaluated before a determination is made on issuance of the permit by the Federal Wildlife Permit Office.

Convention permit applications (not certificates) are reviewed by the Endangered Species Scientific Authority. Based on ESSA's findings and other factors, approval must be granted by the management authority before permit issuance. Acting on the advice of the Service's Division of

CONVENTION

species from the United States. As mandated under the Convention, the volume of trade in these specimens may be limited by the scientific authority "in order to maintain that species throughout its range at a level consistent with its role in the ecosystems in which it occurs and well above the level at which that species might become eligible for inclusion in Appendix I."

For Appendix I or II species taken from the high seas, an import permit must be issued by the country of destination.

Appendix III Species Permits

International shipment of Appendix III species requires either an export or reexport certificate from the country that listed the species, or a certificate of origin from any other country.

Appendix Permits: Summary

To summarize, the U.S. issues import permits only for Appendix I species and for specimens taken from the high seas. It issues export permits only for native species leaving this country. Export permits to bring foreign species into this country must be obtained from proper officials in the country of origin.

Convention Full Exceptions

Full exceptions are allowed Convention species in the following categories:

- Personal or household effects, accompanied by appropriate documentation.
- Transshipment through the United States.

Convention Partial Exceptions

Certificates, instead of permits, must accompany shipments of the following "exceptions" and must be obtained from the country of origin or propagation:

- Pre-Convention specimens (acquired prior to dates listed in Appendixes I, II, or III).
- Animals bred in captivity or artificially propagated plants.
- Exchanges between scientists or scientific institutions of museum or herbarium specimens (issued by the scientist's home country for the specimens already in a collection).
- Reexport of a specimen that was legally imported.

To increase its effectiveness, the Convention requires documentation equivalent to a permit or certificate from non-party countries. An example of acceptable foreign documentation is available from the Federal Wildlife Permit Office.

Law Enforcement, the Department of Agriculture and other appropriate agencies, the Federal Wildlife Permit Office also reviews and issues Convention certificates, as appropriate.

Designated Ports

The regulations require that all animals (except marine mammals) imported into the U.S. enter through eight designated ports for inspection by Fish and Wildlife Service law enforcement officers. Convention exports must also exit through these ports: New York City, Miami, Chicago, San Francisco, Los Angeles, New Orleans, Seattle, and Honolulu. Plants may also be imported and exported through ports designated by the U.S. Department of Agriculture.

Compliance With Other Laws

Other U.S., State, local, and foreign laws may also apply to species listed under the act and/or the Convention. It is the responsibility of the individual to learn about and comply with all applicable laws.

More specific information on the provisions of these laws, as well as permit applications and lists of protected species, may be obtained from the Federal Wildlife Permit Office, U.S. Fish and Wildlife Service, Washington, D.C. 20240 (telephone: 202-634-1496).

Rulemaking Actions—September 1977

FINAL RULING

Five Southeastern Fishes

In a final rulemaking issued by the Service, five species of fishes native to the southeastern United States have been listed as Threatened and their individual ranges have been designated as Critical Habitats (F.R. 9/9/77). The ruling takes effect October 11, 1977.

The five species are the Alabama cavefish (*Speoplatyrhinus poulsoni*), slender chub (*Hybopsis cahni*), spotfin chub (*Hybopsis monacha*), slackwater darter (*Etheostoma boschungii*), and yellowfin madtom (*Noturus flavipinnis*).

The Service believes such protection is needed because the fishes' various habitats are threatened by stream channelization and other alterations, as well as siltation, chemical spillage (including fly ash and sulfuric acid), sewage discharge, and coal mining wastes. In the case of the Alabama cavefish, found only in one cave in Lauderdale County, Alabama, the chief threat is groundwater pesticide pollution attributable to local farming activities.

Background

The final rulemaking is basically the same as that proposed in the *Federal Register* on January 12, 1977.

In response to the proposal, the

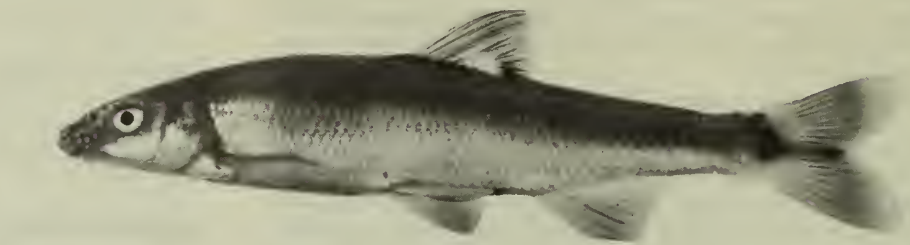


Photo by Bob Jenkins, Virginia Commonwealth University

Spotfin chub, a pollution victim listed as Threatened

Service received comments from three Federal agencies (the U.S. Forest Service, the U.S. Soil Conservation Service, and the Tennessee Valley Authority), four States (Alabama, North Carolina, Tennessee, and Virginia), two private organizations (the American Society of Ichthyologists and Herpetologists and the Sierra Club), and two professional ichthyologists.

Most of the comments either supported the proposal or offered no objections, while some made specific suggestions, especially concerning the particular Critical Habitat delineations.

Based on these recommendations and

the additional information received, the Service decided to somewhat revise its originally proposed Critical Habitat designation for the slackwater darter, principally by reducing the area in the Cypress Creek system and eliminating the Flint River area until more specific data on the fish's needs are available.

In making its final ruling, the Service also announced that it would review the status of each of the five fishes to determine whether or not they should be proposed for inclusion in the appropriate appendixes to the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

PROPOSED RULINGS

Revisions Proposed in Regulations Affecting Threatened Species

Acting to remove a potentially serious loophole, the Service has issued a proposed rulemaking to revise certain regulations relating to Threatened species; it also has issued an interim emergency ruling that puts these revised regulations into effect for 120 days (F.R. 9/16/77).

The loophole occurred as a result of a May 11, 1976, amendment to incorporate the State Cooperative Agreement Program into the Service's existing regulations for Endangered and Threatened species.

It was the Service's initial intention to make sure that, with one major exception, the prohibitions and provisions under a cooperative agreement would apply to both Endangered and Threatened species. The exception was that certain specific restrictions on the taking of Endangered species by qualified State employees did not apply to the

taking of Threatened species [§ 17.21(c)(5)].

The actual language of the amendment, however, inadvertently excluded from applicability to Threatened species not only the subsection dealing with the restrictions but also three other major subsections.

These other subsections set forth the prohibitions dealing with the possession of illegally taken Endangered species, as well as the commercial transportation or sale or offer for sale in interstate or foreign commerce of Endangered species.

Recognizing that these prohibitions also are essential for the conservation of Threatened species, the Service believed that the amendment omission represented a significant risk to the well-being of Threatened species.

Accordingly, the Service determined it was necessary to issue an emergency

rulemaking effectively reinstating the three omitted subsections. This ruling will remain operative from September 16, 1977, until January 14, 1978.

The Service intends to proceed during this period with the regular rulemaking process as it relates to the proposal, which is substantially the same as the emergency ruling. In the meantime, the Service invites all interested parties to submit written comments on the proposed rulemaking. All comments are due by November 15, 1977.

Technically, as applied to the Code of Federal Regulations, the proposal relates to 50 CFR Part 17. The omitted subsections are § 17.21 (d), (e), and (f). Accordingly, the Service proposes to amend § 17.31(a) to read as follows:

§ 17.31 Prohibitions

(a) Except as provided in Subpart A of this Part, all of the provisions in § 17.21 shall apply to threatened wildlife, except § 17.21(c)(5.)

Little Kern Golden Trout

The Service has issued a proposed rulemaking to add the Little Kern golden trout (*Salmo aguabonita whitei*) to the Threatened list and to designate the fish's range in Tulare County, California, as Critical Habitat (F.R. 9/1/77).

The trout is known to occur only in the Little Kern river system. Although the water quality of these streams is generally good at present, forestry management plans now under consideration could result in extensive logging in the drainage basin. It is possible that such activities would increase the temperature of the water and the amount of siltation, thereby seriously threatening the survival of the Little Kern golden trout.

Hybridization represents the most serious threat to this subspecies. Since rainbow trout were introduced in the river system in the 1930's, there has been considerable interbreeding among the two trout. As a result, pure populations of the Little Kern golden trout now exist only in headwater streams that have either not been stocked with rainbow trout or have waterfalls that form a natural barrier to upstream migration of the introduced fish.

In its proposal, the Service recommends as Critical Habitat for the native trout the main channel of the Little Kern River and all streams tributary to the Little Kern above the junction of the Little Kern and the Kern rivers.

Comments on this proposed rulemaking should be submitted to the Service by December 1, 1977.

Critical Habitat Listings Corrected and Republished

The Service has issued a final rulemaking (F.R. 9/22/77) to correct errors that inadvertently appeared in the Critical Habitat listings for six species and subspecies published in the August 11, 1977, issue of the *Federal Register*.

The six species and subspecies are the Florida Everglade kite (*Rostrhamus sociabilis plumbeus*), American peregrine falcon (*Falco peregrinus anatum*), palila (*Psittirostra bairdii*), yellow-shouldered blackbird (*Agelaius xanthomus*), dusky seaside sparrow (*Ammodramus maritima nigrescens*), and Cape Sable sparrow (*Ammodramus maritima mirabilis*).

In addition, the ruling includes a map of the Critical Habitat of the St. Croix ground lizard, which was accidentally omitted from the published ruling on August 11.



U.S. Fish and Wildlife Service photo

Mine detector-like device is used to stun fish and collect Arizona trout in habitat restoration project

Arizona Trout Habitat On Ord Creek Restored

Some Threatened Arizona trout (*Salmo apache*) have gained a new lease on their habitat along a 2.5-mile stretch of Ord Creek on the Fort Apache Indian Reservation in Arizona.

During the first week of September, the habitat area was cleared of competing species of brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), and other fish crowding out the Arizona, or "Apache," trout for food and spawning space. The restoration was performed with the aid of a fish barrier erected across the creek. About 100 Arizona trout, most of them older fish, were captured by electrofishing and held in tanks.

Then the section of creek was cleared by applying antimycin (a toxicant that is essentially harmless to nonaquatic life forms). Later, after the toxicant had disappeared, the Arizona trout were returned to the stream.

The restoration project was undertaken by the Fish and Wildlife Service, in cooperation with the Bureau of Indian Affairs, Fort Apache Tribe, Arizona State University, and the U.S. Forest Service.

Once ranging over the upper Salt and Little Colorado rivers, and possibly the upper San Francisco river system, the Arizona trout had been forced back by the 1950's to a few headwater streams above 8,000 feet by competition from other species. It had also been extensively hybridized with introduced rainbow trout (*Salmo gairdneri*).

Initially listed as Endangered in 1973, the fish was reclassified to the Threatened status in 1975 as the result of intensive management efforts by the Service, Bureau of Indian Affairs, and Arizona Game and Fish Department. It is hoped that restoration projects will so improve this species' status that fishermen may soon look forward to catching this colorful trout.



U.S. Fish and Wildlife Service photo

A live Arizona trout about to be returned to cleared creek

Pending Rulemakings

The Service expects to issue rulemakings and notices of review on the subjects listed below during the next 90 days. The status or action being considered for each final and proposed rulemaking is given in parentheses.

The decision on each final rulemaking will depend upon completion of the analysis of comments received and/or new data made available, with the understanding that such analysis may result in modification of the content or timing of the original proposal, or the rendering of a negative decision.

Pending Final Rulemakings

- Bald eagle (modification of status in Lower 48 States)
- Leopard darter (T, C.H.)*
- 27 snails (E, T)
- 6 butterflies (C.H.)
- Contra Costa wallflower and Antioch Dunes evening primrose (C.H.)
- 13 plants (E, T)
- Grizzly bear (C.H.)
- Gray wolf (reclassification to T in Minn.; C.H.)
- Florida pine barrens treefrog (E, C.H.)
- Golden coqui (T, C.H.)
- 15 crustaceans (E, T)
- Whooping crane (C.H.)
- Black toad (T, C.H.)
- Atlantic salt marsh snake (T)

Pending Proposed Rulemakings

- Ozark big-eared bat (E)
- Virginia big-eared bat (E)
- African elephant (S.O.A. to Asian elephant)
- 11 beetles (E, T)
- Puerto Rican whip-poor-will (C.H.)
- Laysan duck (C.H.)
- 2 harvestmen (E, T)

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	36	227	263	2	17	19
Birds	68	144	212	2		2
Reptiles	10	46	56	2		2
Amphibians	4	9	13	1		1
Fishes	30	10	40	9		9
Snails		1	1			
Clams	23	2	25			
Crustaceans						
Insects	6		6	2		2
Plants	4		4			
Total	181	439	620	18	17	35

Number of species currently proposed: 101 animals
1867 plants (approx.)

Number of Critical Habitats proposed: 34

Number of Critical Habitats listed: 20

Number of Recovery Teams appointed: 59

Number of Recovery Plans approved: 9

Number of Cooperative Agreements signed with States: 19

September 30, 1977

- 3 mussels (C.H.)
- Rocky Mountain peregrine falcon population (C.H.)
- 29 Southeastern U.S. fishes (E, T)
- Humpback chub (C.H.)
- Colorado squawfish (C.H.)
- Woundfin (C.H.)
- Virgin River chub (E, C.H.)

Pending Notices of Review

- African elephant
- Mexican duck
- 10 U.S. reptiles

*Abbreviations: E = Endangered, T = Threatened, C.H. = Critical Habitat, S.O.A. = similarity of appearance

We Still Need Your Help

Your response to our call for information and suggestions has been most encouraging and useful, and it has played an important role in making the BULLETIN a success. Consequently, we invite you to continue sending us reports on your latest research and management activities (accompanying illustrations are also most welcome), as well as your ideas and comments about specific topics and the BULLETIN as a whole.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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October 1977, Vol. II, No. 10



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



Frogman aids the netting of snail darters below Tellico Dam in successful second transfer Nov. 14, following the loss of 98 darters on Oct. 28

98 Snail Darters Lost In Accident

Laboratory analyses have confirmed that a dip net contaminated with rotenone, a pesticide, killed 98 snail darters on October 28 while the Endangered fish were being moved at the Tellico Dam site on the Little Tennessee River.

The accident occurred as the darters were being collected by Service, Tennessee Valley Authority, and Tennessee Wildlife Resources Agency biologists to relocate them from waters below the unfinished dam to their spawning grounds upriver. Two boats were in use at the time.

Unknown Source

The net was the property of the U.S. Fish and Wildlife Service, but the source of contamination is not now known.

Service officials said it could not be determined whether the net was contaminated by rotenone in the bottom of one of the boats, or whether it had been contaminated previously. Rotenone is used routinely in many fishery management activities.

Contamination of the net was suspected at the time of the accident and was subsequently confirmed by analyses conducted by a private laboratory and an Environmental Protection Agency Laboratory, Service officials said.

(continued on page 2)

Supreme Court to Review Closing of Tellico Dam

The U.S. Supreme Court on November 14 agreed to review a lower Federal court ruling which has prohibited the Tennessee Valley Authority (TVA) from closing its Tellico Dam in order to preserve the Critical Habitat of the Endangered snail darter along the Little Tennessee River.

The high court acted on a petition for certiorari filed by TVA, which is appealing an injunction issued last January 31 by the three-judge U.S. Court of Appeals for the Sixth District. TVA contends the lower court ruling, if allowed to stand, would mean the loss of about \$80 million already spent on the nearly completed project, plus additional millions in economic benefits the dam would bring the region.

Environmentalists who brought the suit argued that closing the dam would create a reservoir that would destroy the snail darter's Critical Habitat in violation of section 7 of the Endangered Species Act of 1973. The appeals court agreed. (See the February 1977 BULLETIN).

Co-op Program

Georgia Is 20th State to Receive Federal ES Aid

The U.S. Fish and Wildlife Service signed a cooperative agreement with the Georgia Department of Natural Resources on October 6, raising to 20 the number of States now eligible to receive Federal grant-in-aid funds for their Endangered species programs.

States which have previously signed agreements with the Service are Arkansas, California, Colorado, Delaware, Florida, Maine, Maryland, Michigan, Missouri, Nebraska, New Jersey, New York, New Mexico, North Carolina, South Carolina, South Dakota, Virginia, Washington, and Wisconsin.

In fiscal year 1977, 17 States which had fully implemented their cooperative agreements received a total of \$1.6 million. Requests by States for Federal aid in FY 1978 are expected to total \$6.4 million.

Application of Funds

Under the grant-in-aid formula, States may receive 66-2/3 percent Federal matching funds for approved Endangered species programs. The Federal matching share is increased to 75 percent where two or more States join in cooperative programs for specific species. States which have launched cooperative projects include Colorado and New Mexico for the peregrine falcon, and New York and New Jersey for restoration of the peregrine falcon, bald eagle, osprey, and Indiana bat.

To be eligible for cooperative program funding, species must be listed as Endangered or Threatened by either Federal or State laws, or be candidates for these lists. Federally listed species receive the highest priority, followed by State-listed species.

Species which are listed as at the edge of their range in one State, but are

(continued on page 4)

Ironically, the lost snail darters were being moved to give them a better chance of survival in the shallow waters along a 17-mile stretch of river that has been designated their Critical Habitat above the Tennessee Valley Authority dam. They were among a few hundred of the fish which were blocked from reaching their upstream spawning grounds by the dam's configuration.

Service officials said the biologists involved in the operation were experienced at such transfers. They have successfully moved more than 1,200 snail darters in similar operations last fall and in a previous effort to transplant the fish to the nearby Little Hiwassee River with virtually no losses.

TVA is trying to establish the species in alternate habitats as one phase of a campaign to gain permission to close the nearly completed dam.

Successful Transfer

Following the accident, the biologists made two successful transfers of 117 and 58 darters, respectively, on November 14 and 15 from below the dam to the upstream habitat at Coytee Springs. This move brought the total number of the species above the dam to about 900, according to TVA estimates.

U.S. Fish and Wildlife Service Washington, D.C. 20240

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Regional Briefs

The Endangered Species Program is administered throughout the country by supporting staffs in the Service's six regional and Alaska Area offices. Endangered species activities are coordinated in each region by Endangered Species specialists, and most are now assisted by botanists as well as staff specialists for section 7 consultations.

While the regional Endangered species specialists work locally as arms of the Endangered Species Program, they all see their roles a little differently:

Dave Marshall (Portland, Region 1): "Most of all, we need to be familiar with what's going on here at the ground level. We work hard to coordinate Service/State programs for the maximum benefit of the species. And, we're the front line on section 7 consultation."

Jack Woody (Albuquerque, Region 2): "On the line in the regions, we try to implement the act and the Service's Endangered Species Program. We provide an advisory service to other agencies. Oftentimes, we more frequently deal with other agencies and the public than directly with the Service."

Jim Engel (Twin Cities, Region 3): "We're the watchdogs over regional Endangered species activities. Sometimes, we act as coordinators and

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catalysts of the program so that all can be aware of the act and its implications. Other times, we act as servants to the public. We constantly provide information and advice to State agencies, other Federal agencies, and individuals on what the Federal regulations are."

Alex Montgomery (Atlanta, Region 4): "Our role is to satisfy Service responsibilities for administration of the Endangered Species Program. As Endangered species coordinator, I try to influence 'program advice' objectives to reflect our perspective of regional Endangered species needs—and then try to be sure that we get the best bang for the buck in meeting them."

Paul Nickerson (Boston, Region 5): "We consider ourselves part-biologist, part-accountant, and part program manager. Our work is a diverse mix of State-Federal, animal-plant, and travel-office. You name it, and—if it deals with the Endangered Species Act—we get involved in it."

John Davis (Denver, Region 6): "Section 7 and public information is the 'big press' right now. Some days, it's a full-time job. We review and coordinate recovery plans. We see that cooperative agreements are carried out. We prepare draft environmental assessments. Also, when public demand warrants, we plan and conduct public hearings. Actually, we'd like to have more time to be screening the status of animals and doing more toward listing."

Bill Martin (Alaska Area, Acting): "We try to carry out the objectives of the act on a regional level. Our task really boils down to coordinating recovery efforts only for two Endangered species—the Aleutian Canada goose, and the Arctic peregrine. We need to do more now toward the listing of plants."

Forthcoming issues of the BULLETIN will highlight monthly regional activities in the Endangered Species Program.

BULLETIN Distribution

An increasing number of individuals are requesting their addition to the BULLETIN mailing list. This widespread interest in the Endangered Species Program is greatly appreciated but, unfortunately, due to funding limitations, it is not possible to fill all of the requests.

Distribution of the BULLETIN is restricted to organizations and individuals having a direct involvement in the Program, or a professional need for information about its activities. Future requests to be placed on the mailing list should be accompanied by a brief description of organizational or professional interests which clearly demonstrate a need for regular receipt of the BULLETIN. Thank you!

Proposals Set For Next ES Treaty Nation Meeting

A special working session of technical experts from 20 nations, held October 17-28 at Geneva, Switzerland, has produced agreement on a number of recommended steps to aid implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Discussions were held regarding the possible addition or deletion of species protected by the treaty. But no final recommendations were adopted. Following is a summary of major actions taken at the meeting that will be placed on the agenda of the next full meeting of the treaty nations, scheduled for early in 1979 in Costa Rica.

- **Shipment of specimens.** It was recommended that the Convention draw up a set of international guidelines to cover the shipment of animal specimens by all forms of transportation to assure uniformity of handling. Live animal

regulations of the International Air Transport Association would be used as a basis for the draft guidelines.

- **Regulating exchange of zoological specimens.** The special working session recommended that all nations party to the treaty register all their scientific institutions which maintain animal collections. Scientists holding private collections should be urged to affiliate with registered institutions. Institutions should be required to notify their nation's management authority of any permanent transfers of specimens and this information should be included in the party nation's annual report to the Secretariat of the Convention.

- **Animal rescue centers.** It was generally agreed that management authorities should make their own arrangements for caring for confiscated animals.

- **Identification manual.** The working session recommended that an identifi-

cation manual be developed under direction of the Secretariat to assist control officers in recognizing protected specimens and their parts and derivatives. The manual would be used as a guide by the party nations to develop their own identification manuals.

- **Standardized listings.** To standardize and simplify the listing of species under Appendixes I, II, and III of the Convention, it was recommended that party nations agree to employ, in so far as possible, taxonomy based upon the *International Commission on Zoological Nomenclature* and the *International Code for Botanical Nomenclature*. A committee of experts would use these works to draft a standard taxonomy that would be circulated no later than September 1978.

- **Whales.** A closer working relationship between Convention nations and the International Whaling Commission (IWC) was recommended. It would include providing for reciprocal observers, accepting IWC's offer to advise party nations on cetaceans, and urging party nations not already doing so to adhere to the 1946 Whaling Convention.

- **Analysis of listed species.** A review of species listed by the Convention was recommended pursuant to criteria adopted at the 1976 conference of party nations. Proposed revisions by party nations would be offered for consideration at the 1978 conference or agreed upon by circulating them by mail.

How Convention Species Lists Are Revised

The original lists of species protected under the Convention on International Trade in Endangered Species of Wild Fauna and Flora were negotiated along with the treaty in 1973. They have been amended once—at the full meeting of member nations in 1976.

The rules of the Convention allow member nations to propose changes in Appendix I and II listings either by submitting a proposal 150 days prior to formal meetings, which are held every two years, or by mail.

In the case of a formal meeting, the proposals require a two-thirds majority of those voting for adoption. The amendments take effect 90 days later.

Voting by Mail

The mail procedure is more involved, but allows changes to be made between the biennial meetings. Proposals are submitted to the Secretariat of the Convention, headquartered in Geneva, Switzerland, who then forwards them by mail as a "notification" to all other member nations. These parties have 60 days to submit comments, recommendations, and relevant scientific data. The comments, in turn, are circulated to all parties and, if no objection is received by the Secretariat within 30 days, the amendment is adopted. It then will become effective in 90 days.

If an objection is received by the Secretariat within the 30-day period,

member nations are notified and then requested to formally cast a vote by mail. At least half of the nations must vote within 60 days and a two-thirds vote is needed for adoption. If less than half vote, the proposal is held over until the next formal meeting.

Public Participation

The U.S. Fish and Wildlife Service encourages maximum public participation in the revision process. A member of the public can submit a petition at any time to add or delete a species, or to move a species from one Appendix to another. Petitions must be accompanied by adequate supporting biological information as well as data on trade.

This information will be reviewed by the Service's Federal Wildlife Permit Office and the Office of Endangered Species. If it is complete, the petition will be published as a notice in the *Federal Register*, with a 60-day public comment period allowed. All of the information received will then be reviewed by the Service and a decision made whether to forward the petition as an official U.S. proposal to the Convention Secretariat for action by all of the party nations.

Details on petition procedures may be obtained from the Federal Wildlife Permit Office, U.S. Fish and Wildlife Service, Washington, D.C. 20240 (telephone 202-634-1496).

Changes Due in WPO Permit Processing

The Federal Wildlife Permit Office (WPO) is planning to institute several major changes in the processing of Endangered species permits in response to suggestions offered at a recent series of workshops.

The changes will be aimed at reducing delays in permit issuance and in simplifying permit application procedures. New application instructions are also being developed to help reduce errors in filling out forms.

A total of 11 public and in-service permit workshops were conducted by WPO on the regulations of the Endangered Species Act of 1973 and the Convention on International Trade in Endangered Species of Wild Fauna and Flora. The workshops were said to be well received. But several people commented, "I've learned a lot—but I'm still confused."

common in other States, are not eligible for Federal funding. Plants also are excluded.

Allocation Criteria

Under the Endangered Species Act, criteria have been established for allocating grant-in-aid funds. Generally, consideration is given to

- Species included under international agreement
- The number of Endangered species in a State program
- Potential for restoration of the species covered by the program
- Relative need of species for restoration efforts
- Readiness of a State to implement a program

Activities which are regarded as most vital for grant support are (1) the development of status reports on the species that are candidates for listing as Endangered or Threatened, (2) development of data for determination of Critical Habitats for listed species and for candidate species, and (3) implementation of proposals in approved recovery plans for listed species.

Intent of Agreements

In fashioning the 1973 Endangered Species Act, Congress incorporated cooperative agreements in order to allow qualifying States to retain and strengthen their traditional wildlife management roles. This was done out of recognition that the States want to assist in the restoration of their own Endangered species and are in many cases more familiar with the conservation needs and biological status of their resident wildlife—and those species which may be headed for trouble—than the Federal Government.

The States and territories have well over 5,000 conservation officers and thousands of wildlife biologists, while the U.S. Fish and Wildlife Service has only 180 law enforcement officers in the field and only a few hundred field biologists. Thus, the agreements are greatly increasing the available manpower to conserve Endangered species. In addition, the States and territories possess millions of acres of land that provide habitat for a great many Endangered and Threatened species.

Terms of Agreements

The agreements, which all contain similar basic provisions, are designed to foster better habitat management and protection for the species covered by the program. In addition to providing for financial support, the agreements establish a cooperative law enforcement effort between Federal and State officers. This makes possible joint investigations, apprehensions, and prosecutions of violators of either Federal or State laws.

Island Habitat Acquired for St. Croix Ground Lizard

Green Cay, one of the two remaining island habitats of the Endangered St. Croix ground lizard (*Ameiva polops*), is being acquired by the Service so that it may be preserved in its pristine condition as a refuge.

An estimated 100 to 200 of the lizards occupy the uninhabited 13.8-acre cay that lies a quarter-mile off the north shore of St. Croix about 2.5 miles from Cristiansted. The rocky island is also a nesting ground for the American oystercatcher (*Haematopus palliatus*) and the brown pelican (*Pelecanus occidentalis*).

On June 3, the Service designated Green Cay and nearby Protestant Cay as Critical Habitat for the ground lizard in a final rulemaking listing the species as Endangered (see the June 1977 BULLETIN). Both cays remain free of the

ground lizard's chief predator, the mongoose (*Herpestes auropunctatus*), which contributed to its decline on St. Croix.

Ten years ago, the estimated lizard population on Protestant Cay, which is four acres in size, was 100. Since then, a hotel has been built on the island and a survey in 1976 yielded only about 50 ground lizards.

The owner of Green Cay had been preparing to sell the property to a developer, but subsequently agreed to purchase by the Service. The emergency acquisition was accomplished through a recent reprogramming of Land and Water Conservation funds. The transaction is expected to be completed by January.

States participating in the program are obligated to report emergency takings of protected species and maintain records of all takings, as well as work performed for funded projects. They also must agree to share biological and other information which may be employed by the Service in its consultations regarding other Federal agency compliance with the protective provisions of section 7 of the Federal law. This contribution is especially important because State fish and wildlife departments often have access to information not readily available to the Service.

In order to qualify for an agreement, a State must have established an adequate and active Endangered species conservation program for all Federally listed species. The agreements also stipulate that States must have the appropriate legislative authority to

- Conserve resident fish or wildlife determined by the State fish and wildlife agency or the Secretary of the Interior to be Endangered or Threatened.

- Provide fish and wildlife agencies with wide-ranging investigative authority to determine the status of resident species and their needs.

- Allow for the acquisition of terrestrial and aquatic habitats.

- Provide for public participation in the designation of resident species as Endangered or Threatened.

Included under conservation is authority to conduct research, census taking, law enforcement, protection, habitat acquisition and maintenance, species propagation, live trapping, transplantation, and limited regulated taking. Participating States agree to allow the Service to review their conservation programs. Federal funding may be withdrawn if the program is determined to be inadequate or inactive.

Amending the 1973 Act

Currently, Congress is considering legislation which would amend the Endangered Species Act of 1973 to ease some of the eligibility requirements and enable more States to participate in the aid program. The legislation also would extend the authorization for funding the program.

Many States have had difficulty qualifying for the grant-in-aid program because their laws are not broad enough. The 1973 Federal Endangered Species Act stipulates under section 6(c)2 that States must have established acceptable conservation programs "... for all resident species of fish or wildlife in the State" deemed to be Endangered or Threatened by the Secretary of the Interior. This covers insects, crustaceans, etc., which often are not included under narrower definitions of wildlife in State laws.

To remove this barrier, the House on October 18 passed an amendment (H.R. 6405) which would change the language of section 6(c)2 to allow a State to enter into a cooperative agreement even if it lacked authority to regulate and manage some resident listed taxa—if the State and the Secretary of the Interior can agree on a priority program for those listed species over which the State does have authority.

Although a similar extended authorization bill passed the Senate earlier this year, the facilitating wording has yet to be acted upon by the Senate. It has the support of the Fish and Wildlife Service and the International Association of Fish and Wildlife Agencies, which represents the fish and wildlife departments of all 50 States and Puerto Rico. A Congressional conference report reconciling the House and Senate versions is anticipated before the end of November.

Congress Weighs Federal Nongame Conservation Program

Congress is considering legislation to create a Federal nongame fish and wildlife conservation program.

A measure introduced by Sen. Gary Hart (D-Colo.) and 18 cosponsors in the Senate (S. 1140) would extend aid to all nongame species, including marine mammals, but not to "an Endangered species." But a House bill (H.R. 8606), introduced by Rep. Edwin B. Forsythe (R-N.J.), would except both native Endangered species and marine mammals.

At a hearing September 30 before the House Subcommittee on Fisheries and Wildlife Conservation and the Environment, spokespersons from several national conservation organizations and Federal agencies endorsed the purposes of H.R. 8606 and the need for a program. But there was a range of comment and criticism on certain elements of the bill.

Witnesses from the U.S. Fish and Wildlife Service and the Council on Environmental Quality recommended that, instead of proceeding with H.R. 8606, the subcommittee should defer consideration of a nongame bill until the Carter Administration develops and presents its own proposal early in 1978.

New Publications

Georgia's Endangered Species Program has published a two-document inventory of the protected species in the State entitled "Georgia's Protected Plants" and "Georgia's Protected Wildlife." The documents contain maps, descriptions, and illustrations of 58 flora and 23 fauna species. Copies are available free of charge from the Endangered Species Program, Georgia Department of Natural Resources, Office of Planning and Research, 270 Washington St., S.W., Atlanta, Ga. 30334.

Proceedings of the Florida Panther Conference held March 1976 are now available from the Florida Audubon Society. Copies of the 120-page document can be obtained for \$7.50 (Florida residents add 4% sales tax) from the society at P.O. Drawer 7, Maitland, Florida 32751.

We Still Need Your Help

Your response to our call for information and suggestions has been most encouraging and useful, and it has played an important role in making the BULLETIN a success. Consequently, we invite you to continue sending us reports on your latest research and management activities (accompanying illustrations are also most welcome), as well as your ideas and comments about specific topics and the BULLETIN as a whole.

Witnesses from several national conservation organizations offered their support of H.R. 8606 contingent upon certain revisions, primarily in the proposed means of financing the program. Instead of annual appropriations (which the Fish and Wildlife Service would apportion to State fish and wildlife agencies on a three-for-one, Federal-State matching basis), the organizations would prefer, in the words of the National Audubon Society spokesperson:

"... a program specific for nongame fish and wildlife similar to that existing for game species via the Federal Aid in Fish and Wildlife Restoration Programs. . . . Much of the success of the current programs can be attributed to the continuity and dependability of their funding source, i.e. an excise tax on hunting and fishing equipment. . . . The National Audubon Society . . . [recommends] the adoption of an excise tax on certain recreational equipment, and wild bird foods as a vehicle for establishing the federal grant-in-aid funding requested. . . ."

This excise tax approach was supported by many other witnesses, who agreed with the justification offered by the National Audubon Society spokesperson

that the "the non-consumption recreational use of existing wildlife management areas exceeds the consumptive use by several fold. We feel that these recreationists, which include both consumptive and nonconsumptive users, would be willing to pay their share. . . ."

Representative Forsythe said he would be more than happy to use this approach, if the public asks for it.

While approving the provision for matching grants (the bill also calls for 90-percent Federal grants to the States for initial program planning efforts), the Wildlife Management Institute took issue with the bill's lack of an apportionment formula. Secretary Lonnie L. Williamson said:

"Nongame fish and wildlife needs are not unique to any particular state or region. They are nationwide. There is, however, good reasoning for giving more money to the more populous states since, because of social and economic pressures, they have the most habitat-degradation problems. That situation can be handled nicely, we believe, by an apportionment formula which would allocate one-third of the federal money according to area and two-thirds according to population."

ENDANGERED SPECIES SCIENTIFIC AUTHORITY

Notices—November 1977

The Endangered Species Scientific Authority (ESSA) is responsible for the biological review of applications to export or import species listed in Appendix I, and to export species listed in Appendix II, of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Notices of ESSA's findings and other actions are published in the Federal Register. Summaries of these notices are reported in the BULLETIN by month of publication.

Bobcat, Lynx, Otter, Ginseng Get 30-day Export Extension

The Endangered Species Scientific Authority (ESSA) has extended the deadline for the export of certain inventories of bobcat, lynx, and river otter pelts and American ginseng roots to November 30, 1977 (F.R. 11/7/77). Previously, export of these inventories was generally authorized only through October 31.

ESSA said export of these inventories may continue after November 30, if evidence is submitted "leaving no reasonable doubt that the furs or roots were in inventory on that date."

Inventory statements must show the location and quantity of furs or roots by scientific names of species, and the location of records. The statements must be verified by certified public accountants and filed by November 30, 1977, with the Federal Wildlife Permit Office, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

The November 30 deadline does not apply to export under permit from those States and for those species for which export is authorized from the 1977-78 season's harvest (See September 1977 BULLETIN). Revised findings on these exports are to be published shortly.

These and other findings of ESSA do not automatically ensure issuance of export permits. They are also subject to additional findings required by the Federal Wildlife Permit Office.

Patuxent's Endangered Wildlife Research Program



Bird Breeding Aims at Higher Survival in Wild

In spacious pens filled with natural vegetation to provide ample cover, scientists at the Service's Patuxent Wildlife Research Center are holding seven greater sandhill cranes born in captivity earlier this year that are growing up wild.

The greater sandhills (an unprotected species) are being reared solely by their parents in a first-of-a-kind experiment that may soon prove to be a successful method of captive-rearing Endangered whooping cranes (*Grus americana*) so they will have a better chance of surviving when released to the wild.

Despite the pens' relatively small size compared with natural conditions, the parent sandhills are teaching the young birds to fend for themselves and to hide from human intruders. "These birds are just as wild as any cranes I've seen on a refuge," says Dr. Ray C. Erickson, assistant director for endangered wildlife research at the Center. He says the seven will be released next summer at Gray's Lake in Idaho among a flock of other sandhills that breed there. By next fall, scientists should know if the experiment has worked out.

"Hopefully the sandhills will integrate with the flock. They will be one year old on release and should be much better able to cope with other cranes and predators than hand-reared birds," he says. "It's our assumption that, by rearing whoopers with parents in captivity like these sandhills, the heavy first-year mortality in the wild can be avoided and the chicks can then recognize and associate with whooping cranes already at Gray's Lake."

Erickson notes that the mortality rate for whoopers raised from eggs in the wild is running 80 percent or more in the first three years of the release experiment. Only 6 birds survived out of 30 eggs placed in nests of wild sandhill foster parents at Gray's Lake in 1975 and 1976. Three now survive of the 16 eggs from Wood Buffalo National Park in the Northwest Territories, Canada, that were placed in nests at Gray's Lake this year. Coyotes apparently got many of the lost chicks.

Breeding Species

The parent-rearing experiment is the latest in a series of innovative captive

propagation techniques being developed by Patuxent scientists using surrogates, or "stand-ins," to enhance the recovery of not only whoopers but several other Endangered species. Studies are also in progress to help the Mississippi sandhill crane (*G. canadensis pulla*), which is down to about 40 birds in the wild; Aleutian Canada goose (*Branta canadensis leucopareia*); Andean condor (*Vultur gryphus*), which though itself Endangered is also a

surrogate for the California condor (*Gymnogyps californianus*); Puerto Rican parrot (*Amazona vittata*); masked bobwhite (*Colinus virginianus ridgwayi*); and black-footed ferret (*Mustela nigripes*).

Substitute species employed to test breeding methods for these Endangered or Threatened species include the following: the Florida sandhill crane (*G.c. patensis*) for the Mississippi sandhill; Hispaniolan parrot (*A. ventralis*) for

(continued on next page)

Center's Mission:

Basic Research and Captive Propagation

Intensive research on some of the world's rarest and most Endangered species is being conducted in pens and buildings tucked away in an isolated section of the 4,500-acre Patuxent Wildlife Research Center maintained by the U.S. Fish and Wildlife Service near Laurel, Md.

Although the Center lies midway between metropolitan Washington, D.C., and Baltimore, it is well-secluded, occupying former agricultural land and undisturbed forests. The Center is further buffered by the undeveloped lands of the large Fort Meade military reservation to the north and the U.S. Department of Agriculture's Beltsville Research Center to the south.

The Center's Endangered Wildlife Research Program is funded by the Endangered Species Program. The research program, directed by Dr. Ray C. Erickson, has a staff of 24, including 14 scientists headquartered at Patuxent and at nine field stations scattered around the country.

Mission of the Center

Research programs are underway in support of 46 Endangered and Threatened species. Half of the research studies are intensive efforts and include eight captive propagation projects. Program biologists serve on many of the 59 Endangered species recovery teams that have been established to date.

The mission of the research program is devoted exclusively to obtaining information that will assist in the management of species under the jurisdic-

tion of the Endangered Species Program. Research is conducted in two broad categories:

1. Gaining information on the distributional, behavioral, ecological, physiological, genetic, and pathological characteristics of the species under study to identify and evaluate limiting factors and find means of correcting them.

2. Maintaining captive populations of wildlife species for study and for the production of suitable stock to restore or bolster populations in the wild.

Field study by researchers has led to the proposing of new species for listing or delisting as Endangered or Threatened on the basis of newly developed knowledge of their biological status. The Center also plays an active consulting role in day-to-day problems arising with management programs in the States.

Launched in 1961

The Endangered Wildlife Research Program has been operating at Patuxent since 1965. It originated in 1961 at the Monte Vista National Wildlife Refuge in Colorado on the upper Rio Grande with studies of lesser and greater sandhill cranes and Aleutian Canada geese. This research program was begun in response to the need for information which could be applied in the preservation of the whooping crane.

Currently, the Endangered Wildlife Research Program is budgeted for \$925,000 in fiscal year 1978. Erickson says that private citizens and conservation groups have contributed about \$24,000 to further the work over the past dozen years.

the Puerto Rican parrot; eastern bobwhite (*C.v. virginianus*) for the masked bobwhite; Embden goose (*A. domestica*) for the Aleutian Canada goose, and Siberian polecats (*M. eversmanni eversmanni* and *M.e. santunini*) and European ferret (*M. putorius*) for the black-footed ferret.

Whooper Production

The breeding season for the 22 whoopers at Patuxent starts in March under clock-controlled incandescent floodlights. Because of differences in latitude and elevation between Maryland and the Gray's Lake refuge, as well as the artificially lengthened daylight at Patuxent, the captive birds start laying about a month before the wild birds in Idaho. This has resulted in some eggs being produced at Patuxent before nests are available to receive them at Gray's Lake.

Should the sandhill experiment succeed, this stock of whoopers produced at Patuxent could be parent-reared in pens as wild birds for later release to reduce first-year mortality.

Genesis of Whooper Breeding

When research was started on the whooper in 1961, the bird's population was showing little inclination to increase despite management efforts in its behalf. Analysis by Erickson of crane nesting habits and whooper population figures compiled at the Aransas National Wildlife Refuge since 1938 revealed that, although most cranes lay a clutch of two eggs, only about one whooper family in ten arrived at Aransas with more than one chick. He suggested that much of this egg or chick loss might be avoided by removing one egg from each clutch of two in Wood Buffalo National Park. At the same time, a captive propagation program should be initiated in which the removed eggs could be hatched and stock could be produced to bolster the existing population or to establish new populations.



U.S. Fish and Wildlife Service photo by Luther Goldman

These whooping crane eggs, taken from nests of wild population at Wood Buffalo National Park, Canada, helped build captive flock at Patuxent

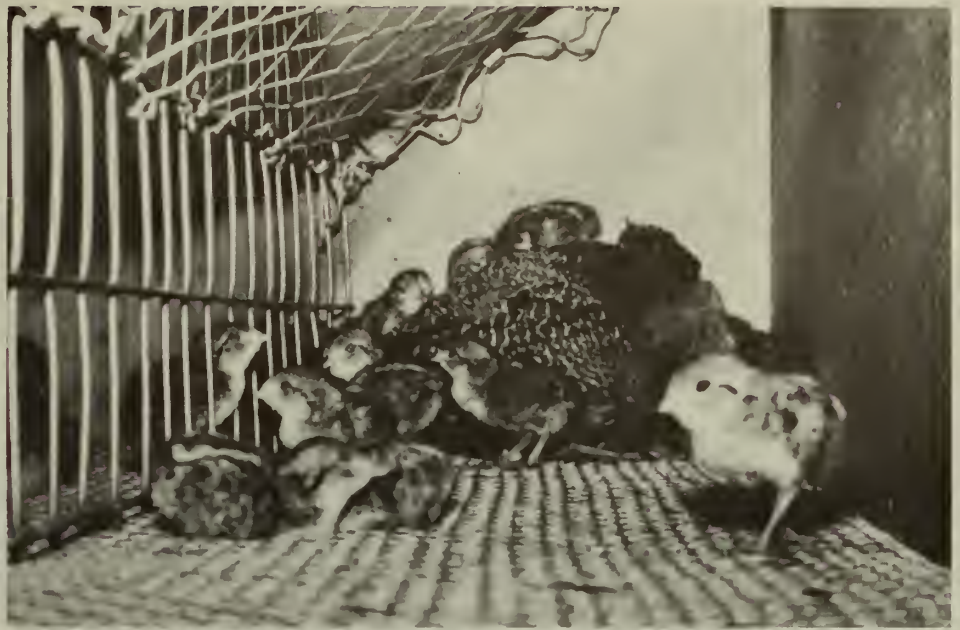


Photo by Steven Dobrott, University of Arizona

Adult male masked bobwhite in "adoption chamber" with chicks hatched at Patuxent and being reared near release site in southern Arizona

Erickson's hypothesis has been substantiated by the unprecedented increase of 26 birds in the wild population during the years that eggs have been removed and transferred to the Patuxent Center or Gray's Lake refuge. The number of cranes in the Wood Buffalo/Aransas population has risen to 69 in the ten years since the egg taking began in 1967, when there were only 43 birds.

Masked Bobwhite: Encouraging

This year, Erickson says there have been encouraging signs that a population of captive-hatched masked bobwhites is becoming established in southern Arizona near the Mexican border, despite poor habitat conditions. Patuxent has been producing about 2,000 masked bobwhites a year for the past three years for reintroduction into their former range where they were extirpated around 1900 by overgrazing.

Erickson says overgrazing is still a problem in reducing available forage, and he is hopeful that an area can be set aside for masked bobwhites as part of the National Wildlife Refuge System. As it is, however, this year's brood appears to be of high quality, indicating the transplanted birds are surviving well, and some are breeding despite excess cover removal by grazing.

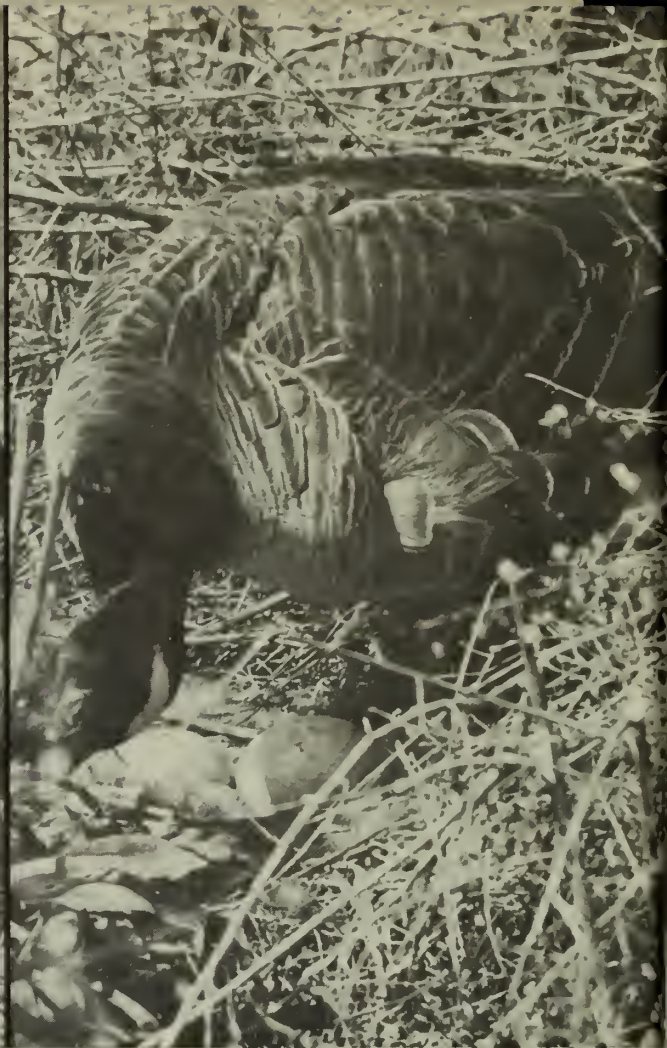
A novel foster parent technique was used by biologist David Ellis to raise the masked bobwhites in captivity. The parents were wild Texas bobwhite cocks (*C.v. texanus*), which were surgically rendered infertile in such a way as to avoid interference with normal hormonal functions which regulate broodiness. At first, the cocks were kept for awhile in a compartmented brooder near enough to call the chicks so that handlers could observe how well they fostered them. Those that performed well were allowed to do the complete brooding. Later, when the birds were older, the cocks taught them how to forage in pens so they could better adapt to the wild.

Puerto Rican Parrot

Production of Puerto Rican parrots is on the upswing—thanks in part to the development of an artificial nest structure arrangement that combats nesting competition from pearly-eyed thrashers (*Margarops fuscatus*).

Researcher Noel Snyder and his assistants discovered that artificial cavities placed near parrot nesting holes would be used by pearly-eyed thrashers, which then showed less interest in the parrot nests—particularly those

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Aleutian Goose, Condor Breeding Gaining Headway

Restocking of Aleutian Canada goose on several small islands in the Outer Aleutians is proceeding with these goslings (upper left) produced at Patuxent. One of the producers is this adult female (above right) shown defending her clutch of eggs in nest. Andean condors bred in pens (below) are destined eventually for release in South America as part of surrogate program to test the feasibility of captive propagation of the Endangered California condor.





U.S. Fish and Wildlife photo by Noel Snyder

Same nest—two occupants. A pearly-eyed thrasher (left photo) takes over parttime residence of an Endangered Puerto Rican parrot's nest. Researchers are helping the

parrot survive by building new nest structures to help reduce the thrasher's predation.

which were so deep or crooked that eggs or chicks were invisible from the rim of the cavity. Parrots had little success in their natural nesting cavities due to predation, flooding, or other problems. The researchers altered the cavities by deepening, using visor-like rain shields, or by providing elevated artificial nest sites, resulting in consistently higher successes.

This combination of management approaches has allowed the two species to live in relative harmony. Moreover, the resident thrashers are keeping other thrashers out of their territory, thereby protecting the parrots.

Parrot productivity has been improved by removing all eggs from wild nests and artificially incubating them in mechanical incubators. Plaster-of-paris eggs are substituted in the nests, where the parent birds then continue to incubate. After the chicks have hatched and when they are about two weeks old, they are substituted for the dummy eggs.

The parents have readily accepted, fed, and cared for the chicks, with a very high fledging rate. As a result, the number of Puerto Rican parrots has increased from an all-time low population of 13 in 1975 to 22 last spring.

Captive Propagation

Erickson emphasizes that captive propagation is not intended to substitute for but to *complement* the preservation and management of natural habitats and the enforcement of regulations to protect species. However, he points out that close observation of species taken from the wild is enabling scientists to learn far more than could be gained from normal observations in the field. He has found that birds in captivity usually display the same behavioral characteristics as in the wild, although some traits may be muted or accentuated. Some cranes, for example, are reluctant to nest in captivity and must be bred by artificial insemination.

Stock for the captive birds at Patuxent has been acquired from the wild with

little, if any, sacrifice to the parent breeding populations. Scientists have removed eggs from nests of species which readily reneest, and part of the clutch has been taken from others which customarily lose a substantial number of their eggs or young.

Captive flocks have been expanded by increasing the productivity of females. By removing some eggs regularly as laid, most females can usually be induced to lay additional clutches for artificial incubation. Their productive years have also increased several fold by their being protected from predators, disease, and accidents.

Use of Surrogates

Patuxent scientists have pioneered the use of surrogate species to learn how to hold closely related Endangered species in captivity and get them to reproduce. The researchers normally carry out complete veterinary, physiological, nutritional, and husbandry investigations on substitute species. Surrogates also are employed to develop and test flight-restricting techniques, and to test procedures for sexing, breeding, and otherwise maximizing their productivity—thus limiting the risks of experimentation on Endangered species themselves.

Restricting Flight

Many of the cranes at the Center are held in open pens, necessitating ways of limiting their flight. Research veterinarians at Patuxent have refined the tenotomy technique that renders birds essentially flightless but maintains the cosmetic appearance of a complete wing. This operation is performed by searing the extensor carpi radialis tendon, the ligaments, and the joint capsule of the wrist with a cautery iron. The cauterized area is then allowed to heal as an open wound, and the wing is kept immobilized by taping it in a folded position for six weeks.

The operation is used on whooping cranes, Mississippi sandhill cranes, and

Aleutian Canada geese which are intended to remain as captive breeders in unroofed pens. Enclosed pens are used for birds reared to be released later in the wild.

Another important function of veterinarian James Carpenter is to closely monitor the health and well-being of all captive stock at Patuxent and to adapt conventional veterinarian techniques to species which are extremely valuable or perhaps even irreplaceable in order to assure them a long reproductive life.

Diet Concerns

The staff nutritionist, John Serafin, has developed separate diets for each captive species designed to yield optimum growth, maintenance, and reproduction. They include starter, maintainer, and breeder diets for the cranes that are similar to poultry rations.

Recently, leg abnormalities were observed among crane chicks 2-5 weeks of age, apparently a susceptibility of long-legged, rapidly growing birds. Various diets have been tested to control the problem, and the scientists are now working to determine the cause.

Improved Fertility

Artificial insemination of whooping cranes and subspecies of sandhill cranes has improved the fertility of productive pairs and yielded eggs from previously unproductive pairs. Dr. George F. Gee, resident physiologist at Patuxent, is using a variety of techniques, including massage and electromechanical, for collecting semen. Insemination is performed biweekly during the egg-producing season, and sometimes thrice weekly for low producers. Gee has achieved fertility rates of 80 percent in formerly unproductive pairs.

He is working on techniques for preserving semen by freezing. If successful, this may be a valuable process for maintaining genetic variety in Endangered crane and goose populations, as well as for preserving genetic values indefinitely.

Captive Breeding Time Slipping Away For Black-Footed Ferret



U.S. Fish and Wildlife Service photo by Luther Goldman

One of four black-footed ferrets in captivity peers from nest box

Old age and disease are foiling the efforts of Patuxent researchers to successfully breed two pairs of black-footed ferrets—the only known captive specimens of *Mustela nigripes*—one of the rarest mammals of North America.

The ferrets—all captured in South Dakota several years ago—include an aged male and female (both about 9 or 10 years old), a middle-aged female, and a younger male that is suffering from cancer.

In 1976 and again this year, the older female had litters by the older male. On both occasions, however, four of the five young were still-born, and the fifth was so weak it survived for only a few days.

James W. Carpenter, research veterinarian for the Endangered Wildlife Research Program, said the middle-aged female has cycled normally, but has refused to mate. The second male recently developed an adenoma carcinoma of the tail, which has been removed in an effort to keep the disease from spreading.

Dwindling Options

With the fertility of the older pair running out—and perhaps affected by a genetic defect that results in the stillbirths—the second pair is rapidly becoming the last hope to breed black-footed ferrets in captivity, unless by some fortuitous circumstance more healthy specimens are captured.

10

Carpenter is dubious about the prospects. He and other researchers are pondering a dwindling number of options when the captive ferrets come into heat again in February. The diseased male has been producing semen and, if they can keep him alive until spring, they hope to be able to collect enough for artificial insemination of the younger female.

But there's a problem: No technique has yet been devised for artificially impregnating mustelids except by surgical procedure. Carpenter's group has been experimenting with European ferrets (*M. putorius*) and has devised a procedure for infusing semen into the uterus by making an incision to gain access to the reproductive tract. One European ferret produced a litter 41 days after this surgery, but a second did not bear, presumably because she received a low volume of semen.

Weighing the Risks

The operation poses some risks, in that it would be the first such attempt on a black-footed ferret.

Complicating the situation is the condition of the ailing male. It may become necessary, if he begins to fail, to collect his semen and store it by freezing. To date, however, no method is known for keeping frozen mustelid semen viable.

"We would have to advance the state of the art very quickly and with very little to work with," says Dr. George F. Gee, a physiologist in charge of artificial insemination projects for Endangered wildlife.

A possibility remains that the aged male could be a semen donor. But whether he will remain in condition this spring is another unanswerable question, as is the question of whether he could produce viable offspring.

All of these factors combined have dimmed the prospects for successful propagation. "When we started out three years ago," says Carpenter, "I was very optimistic. But now it looks pretty grim and disappointing."

Genetic Defects

From available evidence, the prospects of the few remaining black-footed ferrets in the wild also appear very bleak. Carpenter believes the declining wild population is so low it has led to inbreeding, with resultant genetic defects. If true, not only is the chance of finding healthy specimens for captive breeding reduced, but so is the possibility of a natural rebound in the wild population.

Genetic damage may be at the root of the various problems with the four ferrets in captivity, the scientists feel. Carpenter notes that a fifth black-footed ferret—a five-year-old male captured in 1971—was found to be suffering from a number of degenerative diseases when he died last year. He had developed two types of cancerous tumors, hepatitis, arteriosclerosis, and diabetes.

Never Abundant

A highly secretive animal in the wild, the black-footed ferret spends most of its life underground in the burrows of prairie dog "towns." Most sightings are made at night when the ferret occasionally appears on the surface or sticks its head from a burrow.

Literature indicates that the species was once distributed over the grassy prairies from southern Alberta and Saskatchewan south to Texas and Arizona, but apparently never was abundant. Over the past century, the ferret has declined with its prey, the prairie dog, which has been subjected to widespread extermination by poisoning as a pest. In recent years, control programs have been reduced in some areas and smaller prairie dog towns have greatly expanded in size.

The larger towns may extend over scores of acres, making sightings of the elusive ferret more difficult. Wildlife biologists also attribute a recent decline in sightings to concern by ranchers that the reported presence of a black-foot on their property would mean stopping prairie dog control measures. In addition, it is thought that private citizens are

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Ferret (continued)

refraining from reporting road kills, which a few years ago occurred frequently, out of unwarranted fears that they may be prosecuted.

Adaptation Factor

Carpenter thinks the wild ferrets may be declining because of other factors, including canine distemper virus. He notes the virus is commonly carried by other predators on prairie dog towns—dogs, coyotes, badgers, and raccoons.

Some researchers have hypothesized that the ferret's decline has been exacerbated by its apparent inability to adapt to other forms of prey. They note the ferret's closest relative in appearance, the Siberian polecat (*M. eversmanni eversmanni*), is thriving because it will eat many types of small rodents (marots, ground squirrels, hamsters, jerboas, voles, pikas) and even take small birds on occasion. The polecat will range up to 12 miles in search of food, to survive Siberian winters, whereas the black-footed ferret has become almost entirely dependent on the "captive" prey available in prairie dog towns.

Life underground also may have reduced the ferret's reproductive capacity. Ray C. Erickson, director of the Endangered Wildlife Research Program at Patuxent, suggests that a largely subterranean existence may have modified the ferret's "exposure to and gonadal stimulation by light, surface temperatures, and other factors associated with life above ground," perhaps accounting for the fact that the ferret's litters have numbered about half the 8 to 10 young usually produced by the Siberian polecat.



U.S. Fish and Wildlife photo

Hawaiian Forest Bird Survey Progressing

Teams of trained observers are hacking their way through the dense forests of the Hawaiian Islands and gradually gaining a much clearer picture of the status of the State's 19 Endangered endemic forest birds—many of which are near extinction.

The bird surveys have concentrated on Hawaii, the largest island in the group, over the past three years. They were conceived and are led by biologist Mike Scott of the Patuxent Endangered Wildlife Research Program. Other Federal and State agencies and private institutions are cooperating in the survey program.

To perform the surveys, transect trails must be laboriously cut with machete through the tangled undergrowth of uluhe fern, various vines, and other vegetation. The transects are marked at frequent intervals for 8-minute counts of birds seen or heard. Observations also are recorded of other vertebrates and invertebrates and their activities, and of plants, including the extent of bloom of flowers for nectar-feeders.

Observer Teams

About a dozen hardy trail-cutters and observers make up the survey teams. They are given intensive preparatory training in bird sight and sound identification, judgment of distance, survey recording methods, and plant species recognition. All of the team members also are tested for visual and auditory acuity.

In addition to ascertaining the abundance (or scarcity) of Endangered birds, the teams are collecting information for the delineation of Critical Habitats, for the evaluation of the effects of goat and pig damage upon native forest plants, and for an assessment of the spread of some forest diseases.

Eventually, the surveys are expected to cover 8 percent of all forests of the Hawaiian Islands, making it one of the most ambitious surveys of its kind ever attempted for Endangered species and their habitats. The results of the study are expected to lay down a solid foundation for future management and research to preserve the Endangered birds.



U.S. Fish and Wildlife Service photo

Rare catch of a black-footed ferret was made by Conrad Hillman in 1973 in southern South Dakota prairie dog town.

Pending Rulemakings

The Service expects to issue rulemakings and notices of review on the subjects listed below during the next 90 days. The status or action being considered for each final and proposed rulemaking is given in parentheses.

The decision on each final rulemaking will depend upon completion of the analysis of comments received and/or new data made available, with the understanding that such analysis may result in modification of the content or timing of the original proposal, or the rendering of a negative decision.

Pending Final Rulemakings

- Bald eagle (modification of status in Lower 48 States)
- Leopard darter (T, C.H.)
- 27 snails (E, T)
- 6 butterflies (C.H.)
- Contra Costa wallflower and Antioch Dunes evening primrose (C.H.)
- 13 plants (E, T)
- Houston toad (C.H.)
- Grizzly bear (C.H.)
- Gray wolf (reclassification to T in Minn., C.H.)
- Florida pine barrens treefrog (E, C.H.)
- Golden coqui (T, C.H.)
- 15 crustaceans (E, T)
- Whooping crane (C.H.)
- Black toad (T, C.H.)
- Atlantic salt marsh snake (T)

Pending Proposed Rulemakings

- Ozark big-eared bat (E)
- Virginia big-eared bat (E)
- African elephant (S.O.A. to Asian elephant)
- 10 North American beetles (E, T)
- 2 harvestmen (E, T)
- 3 mussels (C.H.)
- Rocky Mountain peregrine falcon population (C.H.)

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	36	227	263	2	17	19
Birds	68	144	212	2		2
Reptiles	10	46	56	2		2
Amphibians	4	9	13	1		1
Fishes	30	10	40	9		9
Snails		1	1			
Clams	23	2	25			
Crustaceans						
Insects	6		6	2		2
Plants	4		4			
Total	181	439	620	18	17	35

Number of species currently proposed: 101 animals
1867 plants (approx.)

Number of Critical Habitats proposed: 34
Number of Critical Habitats listed: 20
Number of Recovery Teams appointed: 59
Number of Recovery Plans approved: 9
Number of Cooperative Agreements signed with States: 20

October 31, 1977

- Colorado squawfish (C.H.)
- Woundfin (C.H.)
- Virgin River chub (E, C.H.)
- 2 Hawaiian cave invertebrates (E, T)
- Leatherback sea turtle (C.H.)
- Grevy's and Hartmann's mountain zebras (E)
- 4 Alabama and Georgia fishes (E, C.H.)
- 5 Southeastern fishes (T, C.H.)

Pending Notices of Review

- African elephant
- Mexican duck
- 10 U.S. reptiles.

Abbreviations: E = Endangered, T = Threatened, C.H. = Critical Habitat, S.O.A. = Similarity of Appearance

No Rulemakings in October

The BULLETIN customarily publishes summaries of all new rulemakings by the Service concerning Endangered or Threatened species during the month preceding the date of the BULLETIN's publication. During the month of October, no new rulings were issued by the Service in the *Federal Register*.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

Law Enforcement

Special Agents Play Deterrent Role in Aiding ES

An alleged international smuggling operation involving 2,500 illegal American alligator hides with a street value of more than \$1 million has been broken up by special agents of the U.S. Fish and Wildlife Service's Division of Law Enforcement—the result of a continuing investigation that began in 1974.

The case, which culminated in the indictment of four men and three corporations by a Federal grand jury in New York on December 6, is the largest smuggling operation prosecuted to date under the Endangered Species Act of 1973. It also represents a prime example of the difficulties special agents encounter in cracking down on violators—one of several key roles played by the Division in protecting Endangered species.

According to the Law Enforcement officials, special agents first learned of a possible smuggling operation in September 1974, when they received information about trafficking in alligator

hides poached in Louisiana. Investigators tracked a shipment of 500 hides on a truck from Louisiana to a tannery in New Jersey and arrested two men.

The men and a corporation were fined \$10,000 and placed on three years' probation after entering guilty pleas. But Division officials say the penalties did not stop the operation.

A subsequent investigation uncovered secret shipments of 2,500 alligator hides destined for tanneries in Japan and France for manufacture into commercial products. Investigators charged two more New York City area men and two Japanese firms, along with the original violators, as conspirators in the scheme. All are expected to go on trial early in 1978.

In another case, four young arctic peregrine falcons were discovered this past summer concealed in a false compartment of a dog shipping crate at the Fairbanks, Alaska, airlines terminal. The discovery was made after Pan American Airlines employees tipped

off Law Enforcement agents that the crate was suspiciously oversized.

An Idaho man was fined \$8,000 and given a suspended one-year jail sentence for his part in the illegal shipment of the Endangered birds. In imposing the fine—the heaviest handed down thus far for a single criminal violation of the Endangered Species Act—the judge took into consideration both the seriousness of the crime and the expense of returning the birds to safe nesting sites in the wild.

In a major investigation earlier this year, special agents working with the U.S. Customs Service exposed an international ring illegally supplying U.S. zoos with reptiles. Twelve wild animal dealers were indicted for violating the wildlife laws of the United States, Switzerland, Australia, Papua, New Guinea, the Philippines, Fiji, and Sri Lanka.

(continued on page 3)

\$2.9 Million Falcon Recovery Plan Approved

The Service has approved a final recovery plan calling for a \$2.9 million emergency Federal-State program to save the Rocky Mountain and Southwestern populations of the Endangered American peregrine falcon (*Falco peregrinus anatum*) from extinction.

In laying out its plan for an intensive recovery effort over an initial five-year period, the recovery team headed by Gerald R. Craig of the Colorado Division of Wildlife said the falcon population in the 13-state region has declined to fewer than 30 nesting pairs from a pre-1950 level of 180 known pairs.

"We anticipate further decline to extinction in view of the prevalent DDT contamination of this species in the region unless management action is undertaken and sustained immediately," the team said.

The plan sets as its prime objective an increase in the region's falcon population to a minimum of 100 actively breeding pairs producing young in the wild by 1995.

Outline of Plan

The plan assigns emergency priority to the following measures:

- direct protection of peregrines and their habitat
- actions to increase natural productivity
- expansion of a captive breeding and release system

The team said nesting peregrines are vulnerable to human activities, sometimes require continual surveillance, "and always require systematic

(continued on page 7)



U.S. Fish and Wildlife Service photo

One of four arctic peregrine falcon chicks found by agents cached in crate at Fairbanks air terminal

Regional Briefs

Botanists have joined four Endangered Species Program regional staffs in recent months. Their primary initial responsibility is to assist the Service in gearing up for final listings and Critical Habitat determinations on many of the 1,779 U.S. plants proposed for Endangered status and evaluation of the 1,404 plant taxa under review.

Regional Endangered species specialists also are contributing to the plant listing effort. They are calling upon the expertise of leading botanists in their areas and coordinating the collection of information about plant status and distribution among other Federal agencies in their regions. The following is a region-by-region summary of recent activities:

Region 1. Botanists Derral Herbst, a specialist in Hawaiian flora, and Duane Atwood, formerly with the Bureau of Land Management, joined the Service this past summer.

Herbst, based in Honolulu, currently is preparing information packets documenting the status of Hawaiian plants, including the 893 endemic species proposed as Endangered. The work is being assisted by members of the Hawaiian Botanical Society and other con-

sulting botanists. He reports that botanists accompanying Hawaiian bird survey teams have found some very rare plants that have not yet been proposed for listing. A more extensive survey of the State's native flora, primarily in low elevation areas, is now in the proposal stage.

Atwood, who is based in Portland, is developing a series of workshops to be conducted on a state-by-state basis to coordinate Federal and State plant conservation activities. Currently, the regional office is reviewing formal requests to list several California and Oregon plant species and is in the process of preparing Critical Habitat proposals for four plants.

Region 2. Endangered species specialist Jack Woody is coordinating the Service's plant status work with the U.S. Forest Service, Bureau of Land Management, Bureau of Reclamation, and U.S. Army Corps of Engineers in the Southwestern States. Several leading botanists in the region have been employed as consultants for status and distribution surveys of proposed and candidate Endangered and Threatened plant species.

A literature and herbarium search on Texas plant species is nearly com-

pleted. The State has more than 100 native plants proposed for listing as Endangered.

Region 3. Endangered species specialist Jim Engel reports that preliminary status reports have been completed for all plants proposed for listing in the region. The work has been accomplished with the cooperation of university botanists and State and Federal agencies. Several of the States already have well-developed plant conservation programs, which has speeded up preparation of the reports.

Region 4. Botanist Wayne Milstead, who also joined the Service this summer, plans a series of plant surveys on refuges and non-Service lands. He has been evaluating the nature of Federal and other plant conservation efforts underway in the region. Surveys of non-Federal lands are in the proposal stage. The information will be used for Critical Habitat proposals and final rulemakings on currently proposed plants. A group of West Florida plants is being investigated for early listing.

Region 5. Botanist Richard W. Dyer, who recently came to the Service from the U.S. Army Corps of Engineers, is working on plant listings with Endangered species specialist Paul Nickerson. The regional office has suggested a strategy plan for plant conservation that includes habitat protection and a sharing of responsibility among governmental, institutional, and private citizen organizations.

The New England Botanical Club, working on a voluntary basis, has been assisting in the collection of the data deemed necessary for preparation of final rulemakings.

Region 6. Final rulemakings are being prepared for 46 Utah, 8 Wyoming, and 7 Colorado plants that are among a total of 260 candidate plant taxa for listing from the region. Janet Hohn, a former Washington Department of Fish and Game botanist who joined the Service in September, now coordinates the work.

The regional office has under preparation by a private contractor an illustrated field guide to Colorado's Endangered and Threatened plants. This project has the support of the Colorado Native Plant Society.

Plant distribution data are being compiled for the 10 States in the region and eventually will be mapped.

Alaska Area. Dan Benfield joins the Service as of January 1 as the area's new Endangered species coordinator. He plans to assist with plant conservation efforts by consulting with experts at the University of Alaska and the Bureau of Land Management, and with other area botanists, to collect data on the 30 plants now under review, or proposed as Endangered, in Alaska.

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Falcons For a Sheik

The three cases are among more than 6,000 opened under the Endangered Species Act of 1973 by Division of Law Enforcement special agents. Over the past four years, 5,000 of the cases have been closed and about 1,100 are pending.

Many of the cases have involved interstate and foreign commerce in the furs of Endangered species, such as leopard, tiger, ocelot, and cheetah, which command high prices because of their rarity. Agents have brought charges against merchants for selling articles (including guitar picks) made of the shell of the Endangered hawks-bill turtle. There have been numerous cases involving persons who have killed American eagles and other Endangered birds and mammals merely because they present tempting targets.

In 1975, a wealthy Chicago businessman was convicted of trying to smuggle two peregrine falcons to the Middle East in order to entice a sheik into a business deal.

Increasing Workload

Clark R. Bavin, Division chief, estimates the Service's 220 special agents devote 25 percent of their time to investigating violations involving Endangered species. With the recent adoption of U.S. regulations to enforce the Convention on International Trade in Endangered Species of Wild Fauna and Flora, he expects the number of investigations to increase substantially. Not only are more species protected by the regulations, but imports of wildlife and products made from them are rising greatly. As an indication of the already mounting workload, Bavin reports that in fiscal year 1977, the Endangered Species case load was 2,523, of which 2,132 cases were closed.

During this last fiscal year, 36 persons received criminal convictions involving \$8,445 in fines and 750 days in jail. (However, the courts suspended all of the jail sentences and \$900 of the fines.) More than 400 civil penalties were assessed, involving \$33,535 in fines. Some 740 animals and wildlife products valued at about \$80,000 were forfeited to the U.S. Government.

The Division is responsible for enforcing all Federal fish and wildlife laws regulating commercial and non-commercial usage. Special agents stationed in 13 district Law Enforcement offices (see map) work closely with State conservation agencies in performing investigations, as well as with Customs Service personnel and agents of the U.S. Department of Agriculture and the U.S. Public Health Service.

A young American bald eagle suffering from gunshot damage to its primary and secondary tail feathers is examined by veterinarians upon arrival by plane at the Auburn University raptor rehabilitation center. The bird was saved by transplants of feathers from other eagles at the center, trained to fly again by students, and then released back to the wild (top photo) on December 5 near Greers Ferry, Arkansas, where it had been found by fishermen on October 19. This was the sixth injured eagle treated at the center under a program supported by the U.S. Fish and Wildlife Service's Division of Law Enforcement—but only the first to be able to fly free again. More than 500 Greers Ferry townsfolk, including several hunters and guides, signed a petition commending the rehabilitation effort and pledging their help in reinstating the eagle to his natural habitat in the area.



In support of the Federal Endangered Species Program, the Division participates in the drafting of regulations, review of permit applications required under the 1973 act and the international convention, and maintains liaison with foreign governments on enforcement matters.

Lacey Act—The Beginning

The Division traces its history back to 1900 with passage of the Lacey Act, the first Federal wildlife protection law. The Lacey Act prohibited interstate commerce in game killed in violation of State laws, and was intended to suppress the taking of game for sale and the taking of plumes and feathers from both game and nongame birds to supply the millinery trade. The act also established the first regulations over the introduction into the United States of exotic species of birds and mammals, and it prohibited the introduction of species that would be injurious to wildlife or agriculture.

Enforcement of the Lacey Act proved difficult, particularly in controlling the killing of birds for food and plumes. To stop the continuing depredation of swans, ducks, geese, cranes, and other birds, Congress in 1913 enacted the Federal Migratory Bird Law, later replaced by the Migratory Bird Treaty Act in 1918 to incorporate provisions of a treaty with Great Britain, which was acting for Canada and its migratory bird resources.

More recently, migratory bird treaties have been signed with Mexico and Japan covering game as well as nongame and Endangered species. Division chief Bavin says that, as a result, migratory bird law violations now make up almost half of the Division's annual volume of cases.

High Wildlife Consumption

But where the Division has some of its largest headaches is in policing imports of wildlife—both alive and dead—and their parts and products. The United States is one of the largest consumers of wildlife in the world, and it is a major marketplace for both legal and illegal specimens. More than 400,000 reptiles are imported each year, along with about 100 million fish, several thousand birds, and about 100,000 mammals—some 85 percent of them primates, used mostly in biomedical research.

Despite a tightening of controls over international traffic in wild species, Bavin says the importation of manufactured goods—leather purses, shoes, jewelry, fur coats, carvings, trinkets, and other products—rose from a low of 1.7 million items in 1972 to 91 million in 1976. Skin and hide imports jumped from 910,000 in 1973 to 32.5 million in 1976. Likewise, the importation of game trophies is on the rise, increasing from 2,800 in 1973 to 34,000 in 1976.

(continued on next page)

A VIP Escort for Migrating Whoopers

On their way south this fall, the whooping cranes at Canada's Wood Buffalo National Park picked up their customary escort as soon as they flew over the border into North Dakota.

Special agents of the U.S. Fish and Wildlife Service's Division of Law Enforcement, alerted by the Canadian Wildlife Service, were waiting in a small plane and in cars to track the main flock of about 70 whoopers down across the Plains States to their winter haven at the Aransas National Wildlife Refuge in Texas.

The purpose of the escort was to safeguard the whoopers against all forms of accident during their annual migration, which occurred just before the opening of the bird hunting season. The big birds wing along at better than 40 miles an hour, but at an altitude of only 500 to 600 feet in the company of a much larger flock of greater sandhill cranes.

As the birds moved southward, the Law Enforcement agents issued progress bulletins to the news media warning residents along the flyway when the birds were arriving. The agents also kept a sharp lookout for any situations that could pose a threat.

By December 1, 61 adult and 9 young whooping cranes hatched this summer had been sighted at or near the Aransas refuge. Last spring, 69 whoopers flew north to Wood Buffalo Park, leaving 8 adults yet to return south. The last stragglers did not complete the annual migration to Aransas last year until the end of December.

Peregrine Watchers

The Division's special agents also help protect a number of other Endangered and Threatened migratory and mobile species in their habitats. These species include the peregrine falcon, grizzly bear, eastern timber wolf, Delmarva fox squirrel, southern bald eagle, greenback cutthroat trout, and Indiana bat.

Special attention is given nesting peregrines in California. Each year, the protection plan calls for 24-hours-a-day surveillance lasting from about two weeks before hatching until one week after fledging at active nest sites to prevent the falcons from being disturbed. This has helped increase nesting success.

The U.S. Forest Service and the California Fish and Game Department also participate in the monitoring and the surveillance effort.



U.S. Fish and Wildlife Service photo

Jo Anne Rumbaugh, one of the new wildlife inspectors at Los Angeles, examines box of cobra skin belts

New Inspector Force

The Division is now inspecting some 18,000 out of approximately 66,000 wildlife shipments a year at eight designated ports of entry (New York, Miami, New Orleans, Chicago, Seattle, San Francisco, Los Angeles, and Honolulu), border ports, and nondesignated ports. To handle the volume promptly, the Division has recently hired a force of wildlife inspectors. These inspectors have the authority to grant Fish and Wildlife Service clearances for import or export if shipments meet all requirements.

Any irregularities discovered by the inspectors are referred to a special agent in the port city for a followup investigation.

Violator Profile

The wildlife inspector program has freed up the special agents so they can concentrate on investigating the increasing number of violations.

Bavin says today's wildlife violator is "more cunning, more calculating, and more inclined to conspire with others to make major inroads into wildlife resources." These people include poachers, middlemen, brokers, and shippers out to make a fast profit.

Well-heeled hunters are another difficult problem. Bavin says "many willingly pay large sums of money to kill a record animal illegally in one part of the country, or for that matter the world" and fly home again. Their trophies are shipped home later by devious means in the hope of escaping detection.

Crocodilian Imports

Hides and products of crocodilians are a major import, legally and illegally, and present the Division with

some of its greatest policing difficulties. The major areas of origin are the rain forests of South and Central America, Central Africa, and Southeast Asia. Hides are shipped to Japan, Europe, and the United States for tanning and manufacture into products.

"Illegal hides are often smuggled out of the country and taken to a second country, which issues export permits to legalize or 'launder' them," Blavin says. "It should be noted this practice of laundering illegal wildlife occurs throughout the spectrum of international wildlife trade. . . . Often it is impossible to determine the source or to establish the illegality of products made from such hides as crocodilians, especially when the pieces of hide are small. Think about identifying watchbands, especially when the shipment contains 50,000."

The Ivory Trade

Products made from ivory present inspectors with another identification challenge. At the present time, the United States prohibits the importation of all ivory and ivory products (except ivory from African elephants) to help preserve the Endangered Asian elephant. Bavin says that currently, as far as can be determined, almost all new

elephant ivory in world trade is of African origin and Asian elephants are not being taken. However, because the price of ivory ranges up to \$50 a kilo, the poaching of African elephants is becoming more prevalent.

California and several other States have banned the importation of all ivory and ivory products. This has created a situation whereby ivory of African origin that has been carved in India, Hong Kong, or China may be shipped under Federal law into Los Angeles or San Francisco, where it is cleared and then transhipped to another State. Thereupon, the product may be transported back to California and sold illegally.

Proof that an imported species, hide, or product is illegal is usually the key to successful prosecutions. Whenever an inspector or an agent comes across a doubtful item, the Division calls upon a specialist in the relevant field of wildlife biology to assist with a positive identification. Recently, for example, an agent took a leopard coat that had been seized from a tourist entering the country to the Smithsonian Institution in Washington, D.C., to verify that it was in fact the product of an Endangered species.

(continued on next page)



U.S. Fish and Wildlife Service photo

This exhibit showing the mission of the Division of Law Enforcement in controlling trafficking of illegal specimens of Endangered species, and their parts and products, is now on display in the Minneapolis Federal Building. It was conceived by Fish and Wildlife Region 3 Endangered species specialists and is winning public attention.

Disposition of Cases

Once an item has been seized and identified as being in violation of the 1973 act or Convention regulations, the person involved is notified accordingly by the agent in the field. The case is then forwarded to Washington for civil action if it has been determined that a criminal prosecution is not warranted.

In cases that are disposed of administratively, the Division reviews the evidence and makes a finding. The

violin is then notified of the penalty assessed, which usually involves forfeiture of the contraband and an appropriate fine. The violator may accept the proposed penalty, petition for relief, or request a hearing before an administrative law judge. Such hearings may result in a higher penalty or a compromise lesser penalty.

The civil penalties may range up to \$10,000 per violation in cases where it is proven that the violator's action was

taken "knowingly" against the law. For people who violate the law unwittingly, such as tourists bringing in an animal as a pet unaware that it has been listed as an Endangered species, the penalty ranges up to \$1,000.

Criminal Penalties

Harsher penalties are imposed for criminal violations in which "willful" intent to break the law is proven. Fines may range up to \$20,000 and the guilty party may receive up to two years in jail.

Law Enforcement agents may pursue criminal cases in Federal or State courts when a State agency is involved. In cases where hunting violations have occurred involving protected species, judges frequently impose a jail term, but then suspend the sentence and place the violator on probation. The violator may also be deprived of his privilege to hunt while on probation. If he is caught in another violation while on probation, he often is required to serve the jail term.

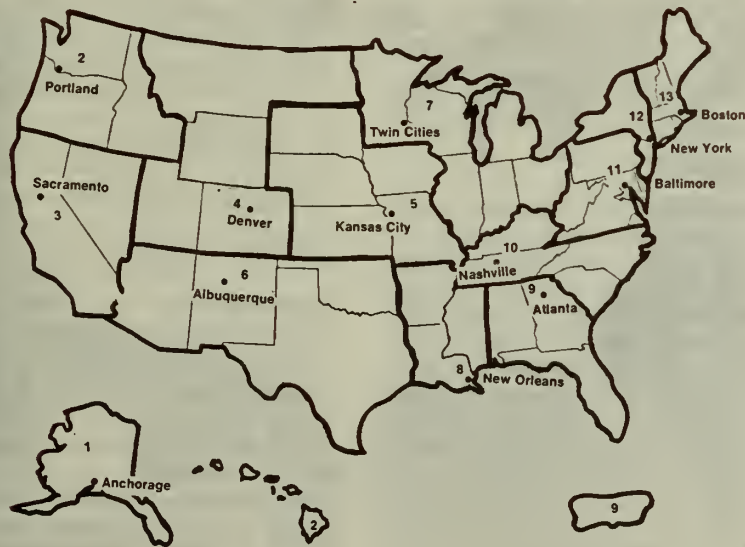
New Breed of Agent

To cope with its broader and more complex responsibilities, the Division has been recruiting and training a new kind of agent—one that Bavin describes as being "more of a professional criminal investigator with a deep interest and knowledge of wildlife management principles." Where the recruiting base was formerly State conservation officers, the Division now is hiring more young college graduates with backgrounds in wildlife management, law, police administration, police science, criminology, and the behavioral sciences.

New agents are sent to the Federal Law Enforcement Training Center at Glynco, Georgia, where they undergo three months of specialized training. The first two months are devoted to criminal investigation, including learning the rules of evidence and search and seizure procedures. The third month is devoted to enforcement of Federal fish and wildlife laws. Upon graduation, the agents are assigned to one of the 13 district offices for a year of on-the-job training.

It is during this period of training that they are expected to become experts in identifying contraband wildlife. "We use pictures and descriptions of wildlife as aids in identification—but it's not enough," says Victor A. Blazevec, special agent in charge of the Branch of Investigations. "For small pieces of fur a feel for the texture is important. It can make the difference between identifying them as felid or canid furs. Other physical characteristics also can be learned only by experience."

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Pine Barrens Treefrog

In a final ruling, the Service has determined the Florida population of the pine barrens treefrog (*Hyla andersonii*) to be Endangered and has designated its territory as Critical Habitat (F.R. 11/11/77).

The ruling, effective December 8, 1977, will help protect the Florida population from further habitat loss and also from would-be collectors.

The final rulemaking is basically the same as that proposed in the *Federal Register* on April 5, 1977 (see May 1977 BULLETIN). Of the six individuals and organizations that commented on the proposal, three endorsed it, two stressed the need for comparable protection for the New Jersey population, and one commented only on the Carolina populations of the species.

Golden Coqui

In a final rulemaking on the golden coqui (*Eleutherodactylus jasperi*), the Service has determined that the species qualifies for listing as Threatened and designated its territory in east-central Puerto Rico as Critical Habitat (F.R. 11/11/77).

Effective December 8, 1977, the ruling provides the first regulations for the protection of this species.

The original proposal was published in the *Federal Register* on April 5, 1977 (see May 1977 BULLETIN). Subsequently it was endorsed by the Commonwealth government of Puerto Rico, as well as by the Democratic Party of Puerto Rico. Neither these nor any other comments received provided substantive information to warrant revising the proposal. Accordingly, the final ruling, in substantiating and somewhat amplifying the proposal, emphasizes the threat of human development to the obligate bromeliad-dwelling frog.

Atlantic Salt Marsh Snake

A final Service rulemaking scheduled to take effect on December 29, 1977, determines the Atlantic salt marsh snake (*Nerodia fasciata taeniata*) to be a Threatened subspecies (F.R. 11/29/77).

The final ruling is substantially the same as the original proposal published in the *Federal Register* on June 2, 1977 (see June 1977 BULLETIN).

Nine individuals associated with various governmental and private organizations commented on the proposal. The Florida Game and Fresh Water Fish Commission gave full support to the proposal, as did F. Wayne King representing the New York Zoological Society.

Although there were no wholly negative responses, several respondents suggested Endangered rather than Threatened status for the snake and also proposed adding Critical Habitat designation.

Following an indepth review of these suggestions, the Service concluded that, on the basis of available data, the status of this subspecies does not meet the criteria for an Endangered classification. Although habitat alteration and hybridization do represent serious threats to the snake, the Service believes that the subspecies is not in danger of becoming extinct at the present time.

Sufficient distributional data are not yet available to warrant final Critical Habitat designation for this snake.

The final rulemaking also reflects a recent nomenclatural change: *Natrix* as the name for North American species of water snakes has been changed to *Nerodia*.

Woundfin

Portions of the main channel of the Virgin River in Nevada, Arizona, and Utah have been proposed as Critical Habitat for the woundfin (*Plagopterus argentissimus*) in a rulemaking issued by the Service (F.R. 11/2/77).

Comments from the public should reach the Service no later than January 2, 1978; comments from the Governors of Nevada, Arizona, and Utah are expected by February 1, 1978.

Background

In the past, the woundfin was found throughout much of the lower Colorado river system (downstream from the Grand Canyon). However, it has been extirpated in most parts of its range and now appears to be found only in the Virgin river system, which is tributary to the Colorado. Survival and recovery of the species depends on the maintenance of suitable, undisturbed habitat (silty waters with moderate to swift currents) in this river system.

The Service is proceeding with the proposed rulemaking on the basis of its notice of intent to determine Critical Habitat (F.R. 5/16/75), and the Woundfin Recovery Team's report and supporting studies.

Four Southeastern Fishes

The Service has proposed Endangered status and Critical Habitat designation for four small fishes found only in the Southeastern United States (F.R. 11/29/77).

The fishes are the Cahaba shiner (*Notropis* sp.), spring pygmy sunfish (*Elassoma* sp.), pygmy sculpin (*Cottus pygmaeus*), and goldline darter (*Perccina aurolineata*). The darter occurs in both Alabama and Georgia; the other three fishes are found only in Alabama.

The Service's proposal is based on evidence that the four fishes have suffered population declines and are currently threatened by adverse modification of their habitats. All four are already considered endangered by the State of Alabama; the darter is listed as threatened by the State of Georgia.

Deadlines for the submittal of comments on the proposal have been set by the Service as follows: January 30, 1978, for the public and February 27, 1978, for the Governors of Alabama and Georgia.

Status Reviews

Mexican Duck

The Service has announced that it will review the status of the Mexican duck (*Anas diazi*) to determine whether or not the bird should be proposed for reclassification from Endangered to Threatened or for complete delisting (F.R. 11/30/77).

The Service is attempting to determine what portion, if any, of the Mexican duck's U.S. and/or Mexican population should be included in any listing under section 4 of the Endangered Species Act of 1973.

Comments relevant to this review should be submitted to the Service no later than February 1, 1978.

Background

The duck was originally listed as Endangered under the Endangered Species Preservation Act of 1966, because of the threat of habitat destruction in the Southwestern United States and hybridization with the mallard (*Anas platyrhynchos*). At the time of listing, it was estimated that perhaps 20-40 percent of all Mexican-like ducks in the United States were possibly hybrids.

Various studies prepared since then indicate that there is a breeding population of at least 15,000 genotypically pure Mexican ducks present in the central highlands of Mexico (the bird's main range). Furthermore, to date there appears to be no evidence that this population is subject to any major threat.

(continued on next page)

In one of these studies, published by the New Mexico Department of Game and Fish in October 1977, John P. Hubbard concludes that 89.6 percent of all Mexican-like ducks preserved as museum specimens from the United States are phenotypically hybrids. Hybridization has been so extensive that Hubbard and several other noted ornithologists believe the Mexican duck should now be reclassified as a subspecies of mallard—*Anas platyrhynchos diazi*.

Ten Reptiles

The status of ten species and subspecies of reptiles is to be reviewed by the Service to ascertain whether or not any of them should be proposed for Endangered or Threatened status (F.R. 11/3/77).

The ten reptiles and their locations are as follows:

- Baker's legless lizard (*Amphisbaena bakeri*)—Puerto Rico.
- Pandanus skink (*Aulacoplax leptosoma*)—U.S. Trust Territory of the Pacific Islands.
- Desert kingsnake (*Lampropeltis getulus splendida*)—Arizona, New Mexico, Texas, and Oklahoma.
- Gray-banded kingsnake (*Lampropeltis mexicana alterna*)—Texas.
- Flat-tailed horned lizard (*Phrynosoma m'calli*)—California.
- Black pine snake (*Pituophis melanoleucus lodingi*)—Louisiana, Mississippi, and Alabama.
- Louisiana pine snake (*Pituophis melanoleucus ruthveni*)—Louisiana and Texas.
- Short-tailed snake (*Stilosoma tenuatum*)—Florida.
- Miami crowned snake (*Tantilla colitica*)—Florida.
- Coachella Valley fringe-toed lizard (*Uma inornata*)—California.

These reptiles are to be reviewed because there is sufficient evidence available that overcollection and habitat destruction may be contributing to their decline.

All information relevant to this status review should be submitted to the Service no later than February 1, 1978.

We Still Need Your Help

Your response to our call for information and suggestions has been most encouraging and useful, and it has played an important role in making the BULLETIN a success. Consequently, we invite you to continue sending us reports on your latest research and management activities (accompanying illustrations are also most welcome), as well as your ideas and comments about specific topics and about the usefulness of the BULLETIN as a whole.

Falcon (continued from page 1)

reconnaissance if we are to remain aware of their status and alert to potentially unfavorable changes in habitat."

The team said natural reproduction can be enhanced by artificial incubation of eggs and return of young to the care of adults. It noted that removal of clutches stimulates the laying of a second set of eggs, providing extra eggs for incubation and subsequent rearing by nonproductive wild pairs.

According to the approved plan, the captive breeding technology for this species is now beyond the experimental stage. A breeding stock of *F. peregrinus anatum* is now being produced, and release techniques are being tested under the Cornell University-Peregrine Fund Project and a few other private projects. But the team said the funding of the projects was "haphazard" and recommended that the service establish a long-term captive propagation and release program at Fort Collins, Colorado, to produce 75 or more young falcons a year.

This would require a breeding stock of 36 pairs. To ensure genetic variation in the captive-reared birds, the team said a minimum of 25 unrelated pairs must be established as foundation stock. (Craig reports that the Peregrine Fund facility in Fort Collins now has the breeding pairs necessary for an ongoing captive propagation program.)

The plan urges a continuing evaluation of DDT contamination of pere-

grines and their prey. What few data are available suggests the contamination is extremely high, but the sources have not been definitely determined. (It appears to investigators that the birds are now picking up many of the contaminants in their southern wintering grounds.)

A public information program about the falcon's recovery needs is also included in the plan.

Funding Proposal

Approximately half of the \$2.9 million program would be funded by Federal agencies, and it is anticipated that the Fish and Wildlife Service would assume about \$1 million, with the remainder provided by the Forest Service and National Park Service. The other half of the funding would be supplied by the States of Arizona, Colorado, Idaho, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, Utah, and Wyoming; it is hoped that this would be accomplished through Federal aid programs.

Even with a full-scale recovery operation, the team warned that a turnaround for the falcon in the region "seems impossible over the near term." But the team is optimistic the peregrine can be returned to "much higher and safer numbers" over a 20-year period, given a "continued, enthusiastic, and skillful effort."

Plan Approved for Santa Cruz Long-toed Salamander

A recovery plan to secure four known pond habitats of the Santa Cruz long-toed salamander (*Ambystoma macrodactylum croceum*) has been approved by the Service. The sites lie just south of Santa Cruz, California, between State Route 1 and Monterey Bay.

The salamander, discovered in 1954, has become Endangered through the loss of its primary habitat in Valencia lagoon, which was partially filled and drained to convert the State highway to a freeway in 1969. Presently, the salamander is confined to four small breeding pond areas supporting an estimated total population of about 10,000 individuals.

Some land has been acquired by the State of California to protect two of the salamander's prime habitat areas—Ellicott Slough and Valencia—which have both been converted to State ecological reserves. The California Fish and Game Department under a cooperative agreement with the Service is surveying the Valencia lagoon area to identify terrestrial habitat vital to the amphibian's existence, which is threatened by rapid residential encroachment.

The Service's planned recovery effort also provides for better management of Valencia Lagoon and Ellicott Slough as well as the possible acquisition of land or easement to provide additional protection.

Nearly 120 acres surrounding the Ellicott Slough reserve—the only relatively undisturbed habitat remaining—have been acquired by the Service for inclusion in the National Wildlife Refuge System. Acquisition of the Struve Pond area is presently being contemplated.

Captive Birds Symposium Planned

The International Ecological Conservation Foundation (IECF) will sponsor the "First International Birds in Captivity Symposium" in Seattle, Washington, March 8-12, 1978. Session topics will include husbandry, medicine, behavior, ornithological studies, nutrition, sexing techniques, and reproduction. For registration information, contact Jan R. van Oosten, chairman, IECF, 1008 James Street, Seattle, Washington, 98104.

Task Force Evaluating ES Research Needs

A task force has been formed to evaluate the process by which Endangered Species Program research needs are identified and research products are utilized by management.

In a memorandum establishing the task force, Program Manager Keith M. Schreiner said the information obtained "will be of great assistance in immediate and long-term management of the Program, and will enable the most efficient allocation of our limited resources for the maximum benefits of listed and candidate species."

Among other questions to be addressed, the task force will make recommendations on:

1. How research objectives can best be formulated to be specific to recovery needs of listed species and closely coordinated with recovery plans and teams.

2. The criteria to be used to determine which research activities should be conducted in-house and which of them should be undertaken by outside contractors.

3. How the effectiveness of monitoring and evaluating outside research contracts can be increased.

Members of the task force are John Murphy (chairman), Rollin Sparrowe, Sandra Hamilton, Chuck Meslow, and Jay Sheppard—all FWS employees. A final report is anticipated in February.

Pending Rulemakings

The Service expects to issue rulemakings and notices of review on the subjects listed below during the next 90 days. The status or action being considered for each final and proposed rulemaking is given in parentheses.

The decision on each final rulemaking will depend upon completion of the analysis of comments received and/or

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	36	227	263	2	17	19
Birds	68	144	212	2		2
Reptiles	10	46	56	3		3
Amphibians	5	9	14	2		2
Fishes	30	10	40	9		9
Snails		1	1			
Clams	23	2	25			
Crustaceans						
Insects	6		6	2		2
Plants	4		4			
Total	182	439	621	20	17	37

Number of species currently proposed: 102 animals
1867 plants (approx.)

Number of Critical Habitats proposed: 34

Number of Critical Habitats listed: 22

Number of Recovery Teams appointed: 59

Number of Recovery Plans approved: 9

Number of Cooperative Agreements signed with States: 20

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new data made available, with the understanding that such analysis may result in modification of the content or timing of the original proposal, or the rendering of a negative decision.

Pending Final Rulemakings

- Bald eagle (modification of status in Lower 48 States)
- Leopard darter (T, C.H.)
- 27 snails (E, T)
- 6 butterflies (C.H.)
- Contra Costa wallflower and Antioch Dunes evening primrose (C.H.)
- 13 plants (E, T)
- Houston toad (C.H.)
- Grizzly bear (C.H.)
- Gray wolf (reclassification to T in Minn., C.H.)
- 15 crustaceans (E, T)
- Whooping crane (C.H.)
- Black toad (T, C.H.)
- Mona boa (T, C.H.)
- Mona ground iguana (T, C.H.)
- Eastern indigo snake (T)
- Houston toad (C.H.)

Pending Proposed Rulemakings

- Ozark big-eared bat (E)
- Virginia big-eared bat (E)
- African elephant (S.O.A. to Asian elephant)
- 10 North American beetles (E, T)
- 2 harvestmen (E, T)
- 3 mussels (C.H.)
- Rocky Mountain peregrine falcon population (C.H.)
- Colorado squawfish (C.H.)
- Virgin River chub (E, C.H.)
- 2 Hawaiian cave invertebrates (E, T)
- Leatherback sea turtle (C.H.)
- Grevy's and Hartmann's mountain zebras (E)
- 4 Alabama and Georgia fishes (E, C.H.)
- 5 Southeastern fishes (T, C.H.)
- Puerto Rican whip-poor-will (C.H.)
- Laysan duck (C.H.)
- African elephant (T)
- Socorro isopod (E)
- Bonytail chub (E)
- Razorback sucker (T)
- 2 Hawaiian arthropods (E, T)
- Whooping crane (C.H.—additional areas)

Abbreviations: E=Endangered, T=Threatened, C.H.=Critical Habitat, S.O.A.=Similarity of Appearance



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T = Threatened

CH = Critical Habitat

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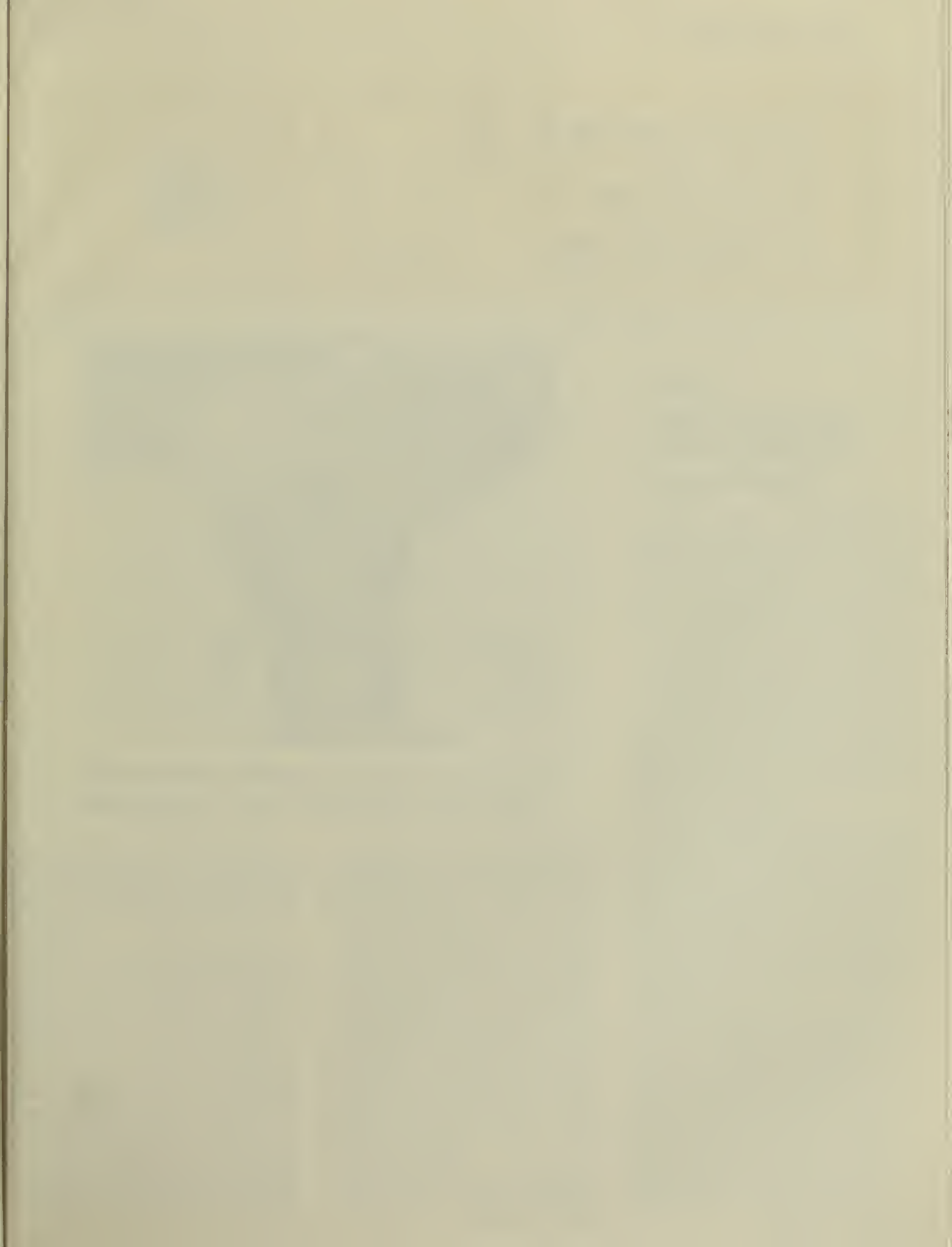
Zebra, Mountain, correction in listing, Mar 81, 7

Zizania texana: final E, May 78, 8; nutria eat transplants, Mar 79, 2; proposed CH, Apr 80, 11; final CH, Aug 80, 10-11

Zosterops conspicillata conspicillata. See White-eye, bridled

Xantusia (=Klauberina) riversiana. See Lizard, island night





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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



National Zoological Park photo

Section 7

Final Rules Set For Interagency Consultation

The U.S. Fish and Wildlife Service and National Marine Fisheries Service (NMFS) have issued a joint final rulemaking (F.R. 1/4/78) that sets forth the consultation process to assist Federal agencies in complying with section 7 of the Endangered Species Act of 1973.

Section 7 prohibits Federal agencies from authorizing, funding, or carrying out any action that may jeopardize the continued existence of listed species or destroy or modify their Critical Habitats. The rulemaking, which took effect upon publication, differs in several important respects from the procedures proposed by the Service on January 28, 1977 (see February 1977 BULLETIN).

Consultation Mandatory

One of the major changes is that consultation with either the Service or NMFS is now mandatory if a Federal agency finds that its activities or programs may affect a listed species in any way. However, the regulations also provide flexibility to permit most Federal actions to be carried out without jeopardizing the continued existence of Endangered or Threatened plants and animals.

In the proposed procedures, initiation of consultation was discretionary on the part of the affected agency. The decision to require consultation was taken to promote conformance with recent Federal court decisions setting forth the policy that consultation is requisite to administration of the law by the Secretaries of Interior and Commerce. After such consultation, it is the responsibility of the involved agency (or agencies) to decide whether or not

(continued on page 6)

Threatened Status Sought for African Elephant to Curb Slaughter for Ivory

New evidence that ivory poachers are decimating herds of African elephants (*Loxodonta africana*) has prompted the Service to propose the species for Threatened status (F.R. 1/16/78).

The proposal sets forth several options for controlling the import of ivory products into the United States to help reduce illegal slaughter of the great beasts. Elephants once roamed the entire continent but are now confined to a few remnant patches of habitat.

Threatened status for the elephant was sought last August by the Fund for Animals in a petition to the Service. But the information submitted at that time was deemed insufficient for action.

The current proposal is based in part on data provided by Dr. Iain Douglas-Hamilton who has been surveying the elephant's status for nearly two years in a three-year study sponsored by the

International Union for the Conservation of Nature and Natural Resources (IUCN). The study is supported by the World Wildlife Fund and the New York Zoological Society.

Of the 34 nations where current information is available, the survey to date shows the elephant has recently become extinct in four countries (Gambia, Guinea-Bissau, Lesotho, and Swaziland) and is declining sharply in 18 other countries. Two countries have both declines and increases in different areas; four countries have stable populations, and only one—Somalia—has an increasing population. Trends have not been determined in the five remaining nations.

Ivory Kill Estimates

On the basis of African ivory exports to Hong Kong and other countries

(continued on page 7)

Regional Briefs

The annual migration southward of several species of Endangered birds is one of the many events that has occupied the attention of Endangered Species Program regional staffers in recent weeks. Following is a region-by-region summary of recent activities:

Region 1. Approximately 1,600 Aleutian Canada geese were counted in mid-November moving down the Sacramento river valley in northern California. This is a peak reported number since rebuilding of the population began several years ago. Many of the geese winter at the Salton Sea National Wild Refuge in southern California.

The regional office is sponsoring a workshop February 23-25 at Reno, Nevada, to coordinate Federal, State, and private organization efforts in the compilation of data on the status of Endangered and Threatened plants. For further information, contact Dr. Duane Atwood at the Region 1 office (503) 231-6118.

Region 2. A final count as of January 1, 1978, shows 71 whooping cranes have arrived at the Aransas National Wildlife Refuge in Texas from Canada's Wood Buffalo National Park. The size of the flock, which includes nine young birds, indicates a net gain of two birds since the whoopers left Aransas last spring. (Seven whoopers

were lost during the year, including some on the southern migration.) Eight of the nine young wore red leg bands affixed by the Canadian Wildlife Service to assist continuing cooperative studies on this extremely rare species.

Region 3. Biologists are attempting to determine through feather analysis with X-ray defraction and electron scanning microscopes whether subpopulations of the Kirtland's warbler are being established. One preliminary indication that this may be occurring has come from a study of a warbler that was live-trapped last year in Ontario, Canada. If subpopulations are identified, it may help account for the loss of warblers in the Bahamas, and possibly Mexico, in the wintering months. The project involves researchers at Ohio State University, the State of Michigan Fish and Wildlife Department, members of the Kirtland's Warbler Recovery Team, and the Service's regional staff.

Region 4. A second pair of red wolves was successfully released January 5 on Bulls Island in the Cape Romain National Wildlife Refuge near Charleston, South Carolina, as part of a translocation experiment. The male and female, which had been in a captive breeding group at the Point Defiance Zoo, Tacoma, Washington, were trapped earlier in Texas. The project is being conducted by the Service in co-



U.S. Fish and Wildlife Service photo
Texas red wolf

operation with the South Carolina Wildlife and Marine Resources Department.

In the first translocation experiment, which began in December 1976, the pair of red wolves swam away from the island after being released. The male later returned and remained until last July, when he was taken back to Tacoma. The female was recaptured on the mainland after crossing the Intra-coastal Waterway. She died of an infection last April.

Region 5. A 413-acre tract of land on Cape May, New Jersey, is being evaluated for possible acquisition with State Endangered species grant-in-aid funds. The area is used extensively by the American peregrine falcons being re-established in New Jersey when they migrate in the spring and fall, and by numerous other raptors, including the southern bald eagle, osprey, and Cooper's hawk. If approved, this would be the first Endangered species land acquisition in region 5.

Region 6. A two-day implementation workshop on the recovery plan for the Rocky Mountain-Southwest population of the American peregrine falcon (see December 1977 BULLETIN) has been scheduled for January 24 at Denver. About 50 representatives of the 13 States involved in the plan and affected Federal agencies are expected to attend the session sponsored by the Service's regional office.

The regional office also will be conducting a whooping crane site evaluation workshop February 23 at Pierre, South Dakota. The session will involve discussion of standardized methods for reporting whooper sightings and the birds' use of habitat on their annual 2,600-mile round trip migration between Texas and Canada. For further information, contact Maurice Anderson at the Service's Pierre Area Office (telephone: 605-224-8692).

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Timetable Fixed For Federal Critical Habitat Survey

A timetable for expediting a survey of all Federal lands for Endangered species Critical Habitat has been developed by the Service in accordance with a Presidential directive.

The plan, which calls for completing the survey by January 1, 1980, places the highest priority on identifying the habitat of species currently facing the greatest threats.

Under the directive issued by President Carter last May 23, Federal land-managing agencies were told to identify, to the extent feasible and "within the shortest possible time," those lands under their control which "appear to you" to be Critical Habitat. Surveys were to be made in consultation with the Secretaries of the Interior and Commerce, with recommendations for Critical Habitat determinations to be forwarded to the Secretaries, who hold final authority for making such determinations. (See June 1977 BULLETIN.)

Priority Categories

The requested schedule for obtaining the information was presented to representatives of Federal land-managing agencies at a workshop conducted on December 9 by the Service's Endangered Species Program, which coordinates the project jointly with the National Marine Fisheries Service. Species were listed under the following categories and timetables:

Priority 1: Recommendations due by January 1, 1979. This category includes species generally facing high threats that substantially jeopardize their continued existence. These include the American peregrine falcon, Puerto Rican parrot, the Hawaiian crow and thirteen other birds, four fishes, three sea turtles, three whales, one seal, twelve freshwater mussels, the jaguarundi, ocelot, and three San Clemente Island plants.

Priority 1A: Critical Habitat determination not feasible at this time because of species' extreme rarity.

Priority 2: Recommendations due by July 1, 1979. Generally, the species in this category are facing medium threats, and recovery efforts could be deferred temporarily without resulting in extinction of the species. This category includes a number of Hawaiian birds, the Arctic peregrine falcon, the Ponape Mountain starling, the salt marsh harvest mouse, the Northern Rocky Mountain wolf, the Sonoran pronghorn, ten fishes, the San Francisco garter snake, three amphibians, six mussels, and one plant.

Priority 3: Recommendations due by

State ES Aid Authorized; Qualifications Eased

President Carter has signed a bill (P.L. 95-212) authorizing \$16 million for the State Endangered species grant-in-aid program, under the terms of the Endangered Species Act of 1973, through fiscal year 1981.

The authorization is \$6 million higher than the original four-year authorization for section 6 of the act, so as to allow for an expansion of the program. Currently, with the addition of Tennessee on December 23, a total of 21 States have signed cooperative agreements with the U.S. Fish and Wildlife Service, making them eligible for Federal grants to assist in carrying out conservation efforts for resident Endangered or Threatened species of fish and wildlife.

The measure, approved by a House-Senate conference committee on November 29, contains a House amendment (H.R. 6405) to facilitate the qualification of States for financial aid under section 6. In

its original form, section 6 specified that, to enter into a cooperative agreement, a State fish and wildlife agency must have the authority and programs to conserve all resident fish and wildlife species which have been listed as Endangered or Threatened by the Secretary of the Interior. Many State agencies lack such broad authority, which often must empower them to manage listed invertebrates as well as vertebrate species.

Language has been included in the new amendment to allow a State to qualify for grant-in-aid funds if it satisfies all other requirements set forth for entering into a cooperative agreement and if the State has submitted plans that indicate it will devote immediate attention to State-listed or Federally listed species that both the State and the Secretary agree are most urgently in need of conservation programs.

January 1, 1980. Many of the species in this category are listed as Threatened and are facing low threats (compared to the species in the other categories). They include such species as the San Joaquin kit fox, alligator, Aleutian Canada goose, and the Comanche Springs pupfish.

"Catch-up" Operation

Keith M. Schreiner, manager of the Endangered Species Program, told the workshop he hoped the surveys would be carried out with the assistance of State, local government, and private experts to get "the best biological facts available." Locating new funds for the work, though, is to be the individual responsibility of each agency involved.

In response to a question raised by a workshop attendee, Schreiner said the surveys were intended to be a "one-time, catch-up operation" for the agencies. In the future, he said, he anticipates that Critical Habitat data will be included at the time species are listed or proposed for listing.

Once agencies have identified any area as a potential Critical Habitat, the President's directive instructs them to exercise caution in making any modifications until the final determination has been made.

Publications Available

In their 444-page book entitled *Endangered and Threatened Plants and Animals of North Carolina*, J. E. Cooper, S. S. Robinson, and J. B. Funderburg present arguments for strengthening North Carolina's protection of Endangered species. The book is available for \$8.00 (checks should be made payable to "NCDA—Museum Extension Fund") from the North Carolina State Museum of Natural History, P.O. Box 27647, Raleigh, North Carolina 27611, Attention: Dawn Newkirk.

"Abstracts for Geographical Data Organization for Rare Plant Conservation," by the New York Botanical Garden, is available from the New York Botanical Garden, Publications Department, Bronx Park, New York 10458.

"The Rare Vascular Plants of Ontario," by George W. Argus and David J. White, can be obtained by sending a written request to the National Museum of Natural Sciences Library—Syllogeus Series No. 14, Ottawa, K1A 0M8, Canada.



National Zoological Park photo

Endangered status has been proposed for Grevy's zebra to curtail imports of its distinctive hide into the United States. Population

of the species has been reduced from 10,000 to 1,500 in Kenya by uncontrolled killing for collectors paying up to \$2,000 per hide.

Two Zebras

Grevy's zebra (*Equus grevyi*) and Hartmann's mountain zebra (*Equus zebra hartmannae*)—both victims of uncontrolled killing—have been proposed by the Service for Endangered status (F.R. 12/23/77).

Highly valued for its distinctively striped hide, Grevy's zebra has been reduced from a population of 10,000 in Kenya in 1971 to about 1,500 today. The species is believed to have been rendered extinct in its former range in Somalia and drastically reduced in Ethiopia. Poachers are estimated to have taken 8,000 in the past three years for export of hides to collectors around the world. Because of the scarcity of hides from this zebra, retail

prices have soared from \$150 to \$2,000 per hide in New York City.

Although Kenya has recently banned hunting of the zebra, the high price for hides is expected to continue stimulating poaching. The proposed rule would prohibit importation of live specimens or parts or products of the animals into the United States, other than for scientific purposes or to enhance the survival or propagation of the species; consequently, it would eliminate the U.S. market for hides.

Livestock Competitor

Hartmann's mountain zebra once ranged along the coasts of Angola, Namibia (formerly South-West Africa), and into South Africa. Its total population was estimated at 50,000 to 75,000. In the past two decades, though, the

subspecies has been ruthlessly eliminated as a competitor for available food to cattle, sheep, and other livestock being raised by ranchers.

Currently, the population is estimated at 2,000 and is confined to Namibia. Because of political unrest in the area and the abundance of firearms, indiscriminate destruction of the subspecies is expected to continue. The Service believes there are no effective means to control the slaughter.

The Cape mountain zebra (*Equus zebra zebra*), the only other subspecies of mountain zebra, has been listed as Endangered in its South African habitat. The population of this zebra is estimated to be less than 200.

Comments on the proposal should be submitted to the Service no later than February 21, 1978.

Two Big-eared Bats

The Service has issued a proposed rulemaking to add the Virginia big-eared bat (*Plecotus townsendii virginianus*) and Ozark big-eared bat (*P.t. ingens*) to the Endangered list and to designate Critical Habitat for the Virginia big-eared bat (F.R. 12/2/77).

The Service has set the following deadlines for submittal of comments on this proposed ruling: January 31 for the public, and March 2 for the Governors of the six States in which the bats are known to occur.

Need for Protection

Both bats have suffered a serious

decline in numbers in recent years, principally as a result of human disturbance. The bats have long been dependent for hibernation and reproductive purposes on certain caves that also have become increasingly popular with spelunkers and other people. Unfortunately, the bats are highly intolerant of human presence and quickly abandon their roosts when disturbed.

It is known that some bats have been deliberately killed, but the chief threat and cause of subspecies decline is human visitation. Even scientific or educational observation of the bats may have an adverse effect on them.

Efforts to shield the bats from visitors have not been successful. One

cave in the Monongahela National Forest, for example, was closed off by Forest Service personnel and declared off-limits by the National Speleological Society; nevertheless, intruders broke into the cave and subsequently a number of bats were found dead.

Virginia Big-eared Bat

The total population of the Virginia big-eared bat is now estimated at less than 4,000. Several hundred of them live in southwestern Virginia. Fewer than 500 occur in Kentucky, where there is now only one known nursery colony. The rest are found in eastern West Virginia, where at least five wintering colonies have disappeared since

the early 1960's and where there are now only three known nursery colonies.

Five caves in West Virginia (four in Pendleton County and one in Tucker County), together with a cave in Lee County, Kentucky, have been proposed as Critical Habitat for this subspecies. These caves contain the three nursery colonies that serve most of the subspecies' remaining members and the three principal wintering colonies.

Ozark Big-eared Bat

The total population of the Ozark big-eared bat is estimated to be less than 200. These surviving bats live in a few caves located in the upland areas of southwestern Missouri, northwestern Arkansas, and eastern Oklahoma.

Background

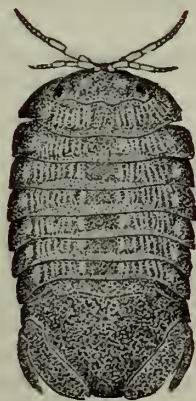
The Service's proposal had its origin in a petition submitted in October 1976 by John S. Hall and Michael J. Harvey, both professors of biology. They recommended Endangered status for both subspecies and also identified the six caves to be considered for Critical Habitat determination.

Data from these two scientists, together with additional information provided by other sources, served as the basis for the Service's decision to prepare and issue a proposal.

Socorro Isopod

Endangered status has been proposed by the Service for the Socorro isopod (*Exosphaeroma thermophilum*), a unique crustacean that, having lost its natural habitat, has managed to survive in an artificial environment (F.R. 12/30/77).

The Socorro isopod, according to the Service, "is of particular interest and importance in that it is one of only two fully freshwater isopods in the family *Sphaeromidae*. The problem of how this species arrived at its present state of evolutionary adaptation is of concern to isopod specialists, and the



Socorro isopod has a head nearly three times as broad as it is long

concept of land-locked fauna is of concern to biologists as a whole."

The species is known only from the Socorro thermal area, which extends for more than 2 miles along the base of the Socorro Mountains in central New Mexico. Within this area are three springs, all of which have been capped off, with their water being piped primarily to the city of Socorro.

Modification of the springs destroyed the natural habitat of the Socorro isopod. However, some of the isopods apparently made their way into the partially open conduit system of an abandoned bathhouse. Consequently, the species' present habitat consists of two small pools and less than 90 feet of iron pipe, all of which are located on privately owned land.

The conduit system receives water from Sedillo Spring, only a few hundred feet distant, and so it is assumed that the isopod population had its origin in that spring; it remains unknown as to whether or not isopods also lived in the other two springs.

In 1976, Michael Hatch of the New Mexico Department of Game and Fish estimated that the Socorro isopod population totaled about 2,400; this was corroborated by a second count in 1977, indicating that the population is relatively stable.

Nevertheless, the species is living in a highly restricted and fragile environment, where it is threatened by reduced water flow in times of drought (as occurred during the summer of 1977) and by the periodic cleaning and dredging of the conduit system.

Accordingly, the New Mexico Department of Game and Fish recommended Endangered listing for the species and provided appropriate supporting data. The Service believes that Endangered classification will provide the Socorro isopod with needed protection in its present habitat and could possibly lead to reestablishment of the species elsewhere.



University of Michigan Museum of Zoology photos

Endangered status has been proposed for the Waccamaw killifish (top), Waccamaw darter (middle) and Waccamaw silverside. All specimens shown are adult males.

Five Small Fishes in North Carolina, Tennessee, Arkansas

To help provide protection for five small fishes found only in limited areas of North Carolina, Tennessee, and Arkansas, the Service has issued a proposed rulemaking to add the five species to the Endangered list and to designate their ranges as Critical Habitat (F.R. 12/30/77).

The fishes are the Waccamaw darter (*Etheostoma perlongum*), Waccamaw killifish (*Fundulus waccamensis*), and Waccamaw silverside (*Menidia extensa*), in North Carolina; the Barrens topminnow (*Fundulus* sp.), in Tennessee; and the Ouachita madtom (*Noturus lachneri*), in Arkansas.

Comments from the public on this proposal should be submitted no later than February 28; comments from the Governors of the three States are due by March 30.

North Carolina Fishes

The Waccamaw darter and Waccamaw silverside are known only from Lake Waccamaw, which is a clear, shallow, sand-bottomed freshwater lake on the Coastal Plain in southeastern North Carolina. The Waccamaw killifish is found in Lake Waccamaw and also in Phelps Lake, a similar body of water located in the eastern part of the State.

The principal threat to the three fishes, which are already on the State's preliminary list of endangered species, is deteriorating water quality resulting from increased human activity along the lake shores.

Around Lake Waccamaw, garden fertilizer runoff, domestic waste seepage (the area lacks a modern sewage system), and drainage canal excavation for real estate development contribute to increasing eutrophication. The use of herbicides for vegetation control in canals flowing into the lake

(continued on next page)

Provisions Set For Interagency Consultations With FWS

(continued from page 1)

to proceed with the proposed activity in light of its section 7 obligations.

One of the reasons for requiring consultation—even if the anticipated result will foster conservation of a listed species—is to avoid duplication of conservation efforts among Federal agencies. For example, Service officials noted that, in the absence of such consultation in the past, the U.S. Forest Service, Park Service, and Fish and Wildlife Service all set up similar programs for Hawaii's Endangered birds.

Under the new regulations, when Fish and Wildlife Service officials receive a request for consultation from another Federal agency, it is required that they evaluate an activity's impact within 60 days. At that time, the Service can determine that the activity will have no impact on listed species, that it will actually benefit the species, or that it is likely to have a harmful effect. The Service can also request that further studies be undertaken in order for it to render its final biological opinion.

After receipt of this additional information, the Service must respond within 60 days.

The final rulemaking recognizes that general consultation procedures must be sufficiently flexible to accommodate the myriad activities that are authorized, funded, or carried out by the Federal Government.

Counterpart Regulations

Accordingly, a new section has been written into the procedures providing for the drafting of joint counterpart regulations by Federal agencies, with assistance from the Service and the NMFS, that are tailored to the needs of individual agencies. Development of counterpart regulations may be necessary when the agency must respond or carry out its activities in a time period shorter than 60 days, for example.

The counterpart regulations also could allow for participation of non-Federal representatives in the consultation process. But the request for consultation would have to come from the Federal agency, which has ultimate

responsibility for section 7 compliance.

Other Provisions

The final rulemaking takes into account some of the many suggestions received on the proposed procedures. One provision allows consultation on a number of similar individual activities within a given geographical area or administrative unit. For example, a number of timber sales on Federal lands could be handled in one consultation instead of in separate ones.

In addition, if the Fish and Wildlife Service learns of a Federal activity or program being carried out that could affect a listed species or its habitat, the Service will request consultation. Until consultation has been completed, the Federal agency must not make a firm commitment of resources that would foreclose the consideration of other options to the planned activity.

A provision also has been included to reflect the applicability of the consultation process to activities of Federal agencies that may affect listed species overseas.

Fishes (continued from page 5)

also poses a threat to the lake's fishes, according to State specialists.

Barrens Topminnow

Found only in Coffee County in central Tennessee, the Barrens topminnow inhabits springs and spring-fed creeks in the headwaters of the Duck River and the west fork of Hickory Creek in the headwaters of the Collins River. Habitat alteration, principally from drainage activities and channeliza-

tion, has had an adverse effect on this species, which is currently listed as endangered by the State of Tennessee.

Ouachita Madtom

The Ouachita madtom is known only from the headwaters of the Saline River, a tributary of the Ouachita River. Within Garland and Saline Counties in central Arkansas, the species inhabits clear, gravel-bottomed streams that traditionally have been characterized by excellent water quality.

The continued existence of the species is threatened by proposed stream alteration and real estate development projects that could result in heavy siltation in the Saline's headwaters.

The Ouachita madtom was one of 29 fishes identified by the Service in a status review notice published in the *Federal Register* on March 18, 1975. Subsequently, the Governor of Arkansas recommended that this species be listed as Endangered—a recommendation that was also supported by a specialist from Arkansas who responded independently to the Service's notice.

Comment Period Extended On 4 Southeastern Fishes

The Service is extending the comment period by 60 days and will hold a public hearing on its proposal to list four small fishes found in Alabama and Georgia as Endangered and to designate their Critical Habitat.

The species involved in the proposal (F.R. 11/29/77) are the Cahaba shiner, spring pygmy sunfish, pygmy sculpin, and goldline darter. The darter occurs in both Alabama and Georgia; the other three fishes are known only in Alabama. Public comments originally were due by January 30, 1978. But because of widespread interest in the proposal, the Service decided to grant an extension and conduct a public hearing. The date of the hearing will be announced in the *Federal Register*.

BULLETIN 1976-77 Subject Index

A subject index of articles and rulemaking actions that have been published in the BULLETIN since the first issue (dated July 1976) and extending through the December 1977 issue is currently in preparation. The index will be mailed separately to subscribers and is expected to be available as a reference to others by the end of February.

where tusks are carved into figurines and jewelry, Douglas-Hamilton estimates that 100,000 to 400,000 elephants were killed in 1976 for their ivory alone. (Hong Kong in 1976 imported 719 metric tons, which at 10 kilograms or 22 pounds per elephant—the average weight of a pair of tusks—represents about 72,000 elephants.)

The survey places the present minimum population at 1.3 million elephants throughout Africa. This suggests an annual kill rate of between 7.7 and 30.8 percent of the entire wild population just for ivory. These rates far exceed the 3 to 7 percent harvest rate generally applied to maintain stable elephant populations in parks and indicate that, if maintained, the elephant could become extinct in many countries in another 4 to 20 years.

Rising Ivory Prices

Douglas-Hamilton attributes the rise in poaching to a recent tenfold increase in ivory prices. In 1970, the price per kilogram was \$3. Currently, it is \$30 a kilogram and higher. A single adult elephant (both males and females bear tusks) thus represents a considerable amount of money to poachers in lands where wages and per capita income are extremely low.

Moreover, Douglas-Hamilton points out that the elephant is under severe pressure from other quarters. They are losing much of their range to Africa's human population explosion and are being compressed within a few protected islands of wilderness. Here, he says, elephants are sometimes destroying trees and shrubs faster than the plants can grow; in extreme cases, they starve. Kenya's Tsavo East National Park lost about 6,000 elephants in a 1970-71 drought and the habitat has not yet recovered.

Elephants eat up to 500 pounds of vegetation a day and, when it becomes scarce, will raid croplands. Douglas-Hamilton says many are being killed to protect crops and for meat in protein-deficient areas such as West Africa, but "killing for ivory is the major threat to elephants right now."

Weak Protection

The IUCN survey indicates that, while many African nations have laws and preserves for elephant protection, enforcement is weak. In Uganda, for example, annual aerial surveys of the two largest national parks show severe population declines and the presence of numerous carcasses suggests ivory poaching is a major cause.

The African elephant is listed in Appendix II of the Convention on International Trade in Endangered Species of

Wild Fauna and Flora. But most African nations where the elephant is present are not among the 40 nations party to the treaty, limiting the effectiveness of the Convention's protection.

Species listed under Appendix II are those which, although not now necessarily threatened with extinction, may become so unless their trade is regulated and monitored. The Convention requires documentation by exporting countries, and reexporting countries, to verify that a listed species was legally taken—and that such taking was not detrimental to the survival of the species—before import is allowed into countries party to the Convention.

The rapid decline of the elephant in many African nations indicates Convention controls are not being applied. In addition, because of inadequate documentation, reexporting countries may not be thoroughly reviewing whether ivory was imported in accordance with Convention provisions.

Rationale for Rulemaking

In proposing the African elephant for Threatened status, the Service has considered that the United States is a major importer of ivory products that come from this species—legally and illegally. Over the past five years, ivory imports have risen steadily and amounted to an estimated \$4.7 million in 1977, approximately one-quarter of the world market.

Under the provisions of the Endangered Species Act of 1973, commercial trade in Threatened species is prohibited unless specific exemptions are allowed. The objective of the proposed rulemaking is to discourage ivory poaching for the U.S. market and to conserve the species. The Service recognizes, however, that in some African nations the elephant is adequately protected and stable populations are being maintained, allowing for a legal harvest of ivory that could be entered into commerce to the benefit of those nations' economies.

The Service perceives that, with better management and protection, the severe decline in elephant populations as a result of poaching could be arrested in other countries and the species restored as a valuable economic resource. The Service also is aware that biological data on the elephant's status are incomplete in some countries and that the extent and nature of illegal trade in ivory are largely unknown.

Options for Control

In its proposal, the Service is soliciting comment on a number of options to regulate the import, export, and interstate commerce in African ivory.

The options have been developed in view of the complex considerations involved in the conservation of this species and are as follows:

1. No commerce, except as may be provided under special permit.

2. Commerce only in products from nations that have ratified the Convention on International Trade in Endangered Species of Wild Fauna and Flora, and that have exported such products under export permits as provided by the Convention, thereby guaranteeing that such export is not detrimental to elephant populations.

3. Commerce only in products from nations that could provide satisfactory certification and evidence that they have adequate conservation programs for the elephant.

4. Commerce only in products from nations that can demonstrate that the products originated in a nation meeting the criteria for options 2 or 3 above.

One version of these options will be promulgated as part of the "special rules" which would accompany a final Threatened listing for the elephant. The Service wishes to receive a broad range of comments on the probable effects of the various options in order to arrive at the optimum method—or methods—of control. These comments should be submitted to the Service no later than March 20, 1978.

International Cooperation

To further cooperative conservation measures internationally, the Service will consult with all involved foreign governments, as required by the act, before issuing a final rulemaking.

In addition, the Service plans to fund a study of the ivory trade. This study is intended to fill in missing information about how trade in ivory is conducted—sources of raw materials, manufacture, and distribution of the raw materials as well as finished products. A number of other research projects are in progress by conservation organizations to develop additional knowledge to help protect the elephant.

Reference Note

All Service notices and proposed and final rulemakings are published in the *Federal Register* in full detail. The parenthetical references given in the BULLETIN—e.g., (F.R. 1/17/78)—identify the month, day, and year on which the relevant notice or rulemaking was published in the *Federal Register*.

Pending Rulemakings

The Service expects to issue rulemakings and notices of review on the subjects listed below during the next 90 days. The status or action being considered for each final and proposed rulemaking is given in parentheses.

The decision on each final rulemaking will depend upon completion of the analysis of comments received and/or new data made available, with the understanding that such analysis may result in modification of the content or timing of the original proposal, or the rendering of a negative decision.

Pending Final Rulemakings

- Bald eagle (modification of status in Lower 48 States)
- Leopard darter (T, C.H.)
- 27 snails (E, T)
- 6 butterflies (C.H.)
- Contra Costa wallflower and Antioch Dunes evening primrose (C.H.)
- 13 plants (E, T)
- Houston toad (C.H.)
- Grizzly bear (C.H.)
- Gray wolf (reclassification to T in Minn., C.H.)
- 15 crustaceans (E, T)
- Whooping crane (C.H.)
- Black toad (T, C.H.)
- Mona boa (T, C.H.)
- Mona ground iguana (T, C.H.)
- Eastern indigo snake (T)
- New Mexican ridge-nosed rattlesnake (E, C.H.)

Pending Proposed Rulemakings

- 10 North American beetles (E, T)
- 2 harvestmen (E, T)
- 3 mussels (C.H.)
- Rocky Mountain peregrine falcon population (C.H.)
- Colorado squawfish (C.H.)
- Virgin River chub (E, C.H.)
- 2 Hawaiian cave invertebrates (E, T)
- Leatherback sea turtle (C.H.)
- 4 Alabama and Georgia fishes (E, C.H.)
- Puerto Rican whip-poor-will (C.H.)
- Laysan duck (C.H.)
- Bonytail chub (E, C.H.)
- Razorback sucker (T, C.H.)

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	36	227	263	2	17	19
Birds	68	144	212	2		2
Reptiles	10	46	56	3		3
Amphibians	5	9	14	2		2
Fishes	30	10	40	9		9
Snails		1	1			
Clams	23	2	25			
Crustaceans						
Insects	6		6	2		2
Plants	4		4			
Total	182	439	621	20	17	37

Number of species currently proposed: 112 animals
1,867 plants (approx.)

Number of Critical Habitats proposed: 43

Number of Critical Habitats listed: 22

Number of Recovery Teams appointed: 59

Number of Recovery Plans approved: 12

Number of Cooperative Agreements signed with States: 21

Listed Species: Update

A comprehensive U.S. List of Endangered and Threatened Wildlife and Plants was last published in the *Federal Register* on July 14, 1977. Since that date, the following species have been added to the official list (E=Endangered; T=Threatened):

Birds:	Shrike, San Clemente loggerhead (E)
	Sparrow, San Clemente sage (T)
Reptiles:	Anole, giant (E)
	Lizard, island night (T)
	Snake, Atlantic saltmarsh (T)

Amphibians:	Treefrog, pinebarrens (E)
	Coqui, golden (T)
Fishes:	Cavefish, Alabama (T)
	Chub, slender (T)
	Chub, spotfin (T)
	Darter, slackwater (T)
	Madtom, yellowfin (T)
Clams:	Riffle shell, tan (E)
Plants:	San Clemente broom (E)
	San Clemente bushmallow (E)
	San Clemente Island lackspur (E)
	San Clemente Island Indian paintbrush (E)

December 31, 1977

- 2 Hawaiian arthropods (E, T)
- Whooping crane (C.H.—additional areas)
- Illinois mud turtle (E, C.H.)
- Key mud turtle (E, C.H.)
- Plymouth red-bellied turtle (E, C.H.)

- 5 Ash Meadow plants (C.H.)
- 7 California and Oregon freshwater fishes (E, T)
- 23 foreign mammals and 1 bird (E)
- Light-footed clapper rail and yellow-shouldered blackbird (C.H.)

Abbreviations: E=Endangered, T=Threatened, C.H.=Critical Habitat



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

Recovery Plan Approved For Protecting Ecosystem of Hawaii's Endangered Palila

A final recovery plan for the Endangered palila (*Psittirostra bairdii*), a member of the endemic Hawaiian honeycreeper family, has been approved by the Service.

The plan's primary objective is to restore the bird to nonendangered status on State-owned lands flanking Mauna Kea, the highest mountain on the Island of Hawaii. This would be accomplished in part by eradicating all feral sheep and goats that are threatening the palila's last remaining habitat, an ecosystem of mamane (*Sophora chrysophylla*) and naio (*Myoporum sandwicense*) forests above the 6,000-foot level.

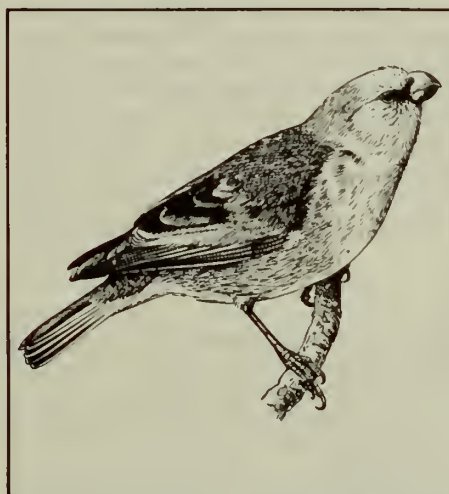
The recovery team, headed by Andrew J. Berger of the University of Hawaii, said, "If the present destruction and modification of the mamane-naio ecosystem being done by these animals can be stopped, achievement of the plan's primary objective will be 90 percent complete."

At the turn of the century, the palila ranged over a large part of the island, including the slopes of adjacent Mauna Loa. The reasons for the drastic reduction in range are not fully known, the recovery team said.

Palila Population Determined

Currently, the recovery team estimates the total palila population at 1,400 individuals. These birds are found on or near the Mauna Kea Forest Reserve and the Kaohe Game Management Area, which are under State jurisdiction and located on the northwestern slopes. The recovery plan recommends that two parcels of land be acquired for inclusion in these two areas to provide additional protected habitat for the bird. Both parcels would be fenced to keep out livestock from adjacent pastures.

Drawing courtesy of Dover Publications



Palila's thick bill is adapted to tearing open tough pods of mamane tree

In 1937, there were an estimated 40,000 sheep roaming Mauna Kea, about one animal for every two acres. Since 1955, sheep populations have been reduced somewhat, and vegetation has recovered at lower elevations of the Mauna Kea Forest Reserve. However, the recovery team said, "at higher elevations between 8,000 and 10,000 feet, degradation of the ecosystem continues," necessitating the eradication of all sheep and goats to protect the mamane-naio forest on which the palila is totally dependent.

Other Species To Benefit

The recovery team noted that the plan also would benefit five other Endangered endemic birds that occur on Mauna Kea. These include the Hawaiian dark-rumped petrel (*Pterodroma phaeopygia sandwichensis*), Hawaiian hawk (*Buteo solitarius*) Hawaii creeper (*Loxops maculata mana*), Hawaii akepa (*Loxops coccinea coccinea*), and akiapolaau (*Hemignathus wilsoni*).

(continued on page 3)

Critical Habitat Determined for Houston Toad

Parts of two southeastern Texas counties have been designated as Critical Habitat for the Endangered Houston toad (*Bufo houstonensis*) in a final rulemaking issued by the Service (F.R. 1/31/78). The ruling is scheduled to become effective on March 3, 1978.

The habitat areas designated in the ruling are (1) an area in Bastrop County, northeast of the town of Bastrop, that includes two Texas state parks, and (2) an area in Burleson County, near the town of Caldwell.

Service officials say that the best populations of this extremely rare amphibian live near Bastrop, while a much smaller but still viable population exists near Caldwell.

This small brown, secretive toad lives in isolated stands of loblolly pine (spottily distributed in southeastern and central Texas) and is usually seen only during its spring breeding season. The total population of the toad, which has been listed as Endangered since 1970, is roughly 1,000 to 1,500 individuals.

In its proposed rulemaking, published in the *Federal Register* on May 26, 1977, the Service also identified six localities in Harris County, which includes the city of Houston, as potential Critical Habitat for the Houston toad (see June 1977 BULLETIN).

City Areas Excluded

In the final rulemaking, however, the Service found that, although remnant populations of the toad may exist in some of these localities, none of these areas should be listed as Critical Habitat at the present time. This determination was based largely on the findings of a special review team organized by the Service, consisting of Service personnel, consultants, and a representa-

(continued on page 3)

Regional Briefs

Endangered Species Program regional staffers report the following developments in their areas in recent weeks:

Region 1. A fire swept through more than 600 acres of precious mamane trees—Critical Habitat for the Endangered palila (*Psittirostra bailleui*)—on the slopes of Hawaii's Mauna Kea during December. The blaze reportedly started on the U.S. Army's Pahakuloa Training Area and spread to the mamane forest, which is situated on State land.

Field surveys conducted during December failed to locate a single Marinas mallard (*Anas oustaleti*). One island remains to be checked for the bird, but the outlook is bleak. The mallard was listed as Endangered on June 2, 1977, and formerly ranged on the islands of Rota, Saipan, Tinian, and Guam.

Transect surveys will get underway shortly in Hawaii's Kona District as part of the continuing status and distribution studies of Endangered endemic forest birds. Representatives of Federal, State, and private agencies are participating on the transect teams.

Region 2. Details of a final plan for restoring the Atlantic Ridley sea turtle (*Lepidochelys kempii*) were agreed upon at a meeting in January of Jack Woody and other Service members with representatives of the National Park Service, the Texas Parks and Wildlife Department, and the Mexican Government. One objective of the plan is to establish a second breeding population of the turtle on the Texas gulf coast, using artificially incubated eggs.

The species has dwindled to about 2,000 individuals from a population previously estimated at 40,000. Last July, Mexico established an endangered species conservation zone around the Atlantic Ridley's only known nesting area.

Region 4. Dr. Noel F. R. Snyder of the Patuxent Wildlife Research Center has begun a study of the potential effects on wildlife if the level of Florida's Lake Okeechobee is raised by a proposed Army Corps of Engineers project. The study will include the banding of Florida Everglade kites (*Rostrhamus sociabilis plumbeus*) to determine their dispersal characteristics. Other measurements will be made to gauge how a water level increase would affect the kite's productivity, as well as the pop-

ulation of the apple snail, on which the kite depends for food, and other lake biota.

A total of 706 snail darters (*Percina tanasi*) have been netted below the Tennessee Valley Authority's Tellico Dam and moved four miles upstream to Coytee Springs on the Little Tennessee River since last November 14. Diving operations have been temporarily interrupted by cold weather, a lack of available divers, and a pending Service decision on appropriate techniques for marking the transplanted darters.

Region 5. Restoration activities for the recently rediscovered Virginia round-leaf birch (*Betula uber*) will be coordinated by a newly established protection management and research committee composed of representatives of various Federal agencies, the National Arboretum, local universities, and private citizens. Plans call for establishing a public viewing area, reintroduction of cultivated seedlings to selected areas, and other conservation measures to be carried out this spring.

Region 6: Preliminary plans are being made by regional personnel, in cooperation with recovery team members, to train a dog to locate black-footed ferrets (*Mustela nigripes*) in the wild. Initial attempts using this technique will be made in late spring in South Dakota, pursuant to the recovery plan for the species (which recommends such experimentation).

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Editor's Note

In the December 1977 BULLE-
TIN's lead story ("Special Agents
Play Deterrent Role in Aiding ES"),
we neglected to emphasize that our
Service's law enforcement agents
cooperate closely with personnel
from the National Marine Fisheries
Service (NMFS), in addition to the
other agencies mentioned, in their
special investigations. In fact, our
law enforcement personnel work so
closely with NMFS in their jointly
mandated responsibility to enforce
the Endangered Species Act that we
could well have taken their needed
assistance for granted—at least for
the purposes of this article. We
would like to thank those BULLETIN
readers who brought this matter to
our attention, in that the Division of
Law Enforcement recognizes and
appreciates the valuable services
contributed by NMFS personnel.

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The akiapolaau is a permanent resident of the mamane-naio forests, occurring in low numbers. According to the recovery team, maintenance of this population may serve to preserve genetic variability and thereby help ensure the akiapolaau's survival.

As recently as 1970, the recovery team said, the dark-rumped petrel was sighted on Mauna Kea and may still nest there. The Hawaiian hawk is found primarily on the eastern slopes of Mauna Kea and has been known to breed on the northwestern slopes. The akepa and creeper are rare in the palila habitat and may occur only as birds of passage.

The recovery team estimated the cost of implementing the plan at a total of \$456,150 through fiscal year 1986. This sum would provide funds for a number of studies on the mamane-naio forests.

Toad (continued from page 1)

tive of the Texas Parks and Wildlife Department. The team met in Houston in October 1977 and reviewed all of the localities proposed as Critical Habitat in an effort to determine both the suitability of habitat and potential threats. The specially appointed team reported that two of the proposed areas in Harris County contained neither suitable habitat for the species nor clear evidence of resident toads.

For the other four areas in the county, data were deemed insufficient at present to warrant inclusion of the areas in the Service's rulemaking.

Comments on the Proposal

The Service received comments from a total of 26 individuals and organizations. Of these, 16 expressed support for all or most parts of the proposed ruling, 7 opposed all or major portions of it, and 3 provided information without discussing the proposal's merits.

Lauren E. Brown (Illinois State University) supported the proposal in its entirety, emphasizing that the Houston toad, with a population he estimated at probably not more than 300, has been repeatedly mentioned by various authors as a species that should have a high priority for protection and rehabilitation. Brown also argued that all of Harris County, including the Houston area, is potentially Critical Habitat for the toad.

The principal objections to the proposal focused on the six areas in Harris County. Congressman Robert Gage (22d District), for example, called for a compromise that would allow for continued urban development in the county and also prevent intrusion on the

Plan Maps Recovery of Cui-ui Population

The Service has approved a recovery plan designed to restore the cui-ui (*Chasmistes cujus*), a species of sucker found only in Pyramid Lake, Nevada, to the point where it may be possible to reclassify the fish from Endangered to Threatened.

Along with the lake's population of cutthroat trout, (*Salmo clarki henshawi*), the cui-ui formerly was a staple in the diet of the Pyramid Lake Paiute Indians. In the 1930's, however, partial diversion of the Truckee River, which flows from the Sierra Nevada into the lake, resulted in the extermination of the trout and a severe reduction of the cui-ui's population. Construction of the Derby Dam lowered the lake's water level by 80 feet and blocked the path of cui-u's attempting to spawn in the Truckee River.

In 1976, the Bureau of Reclamation completed a fishway in the Truckee to provide cui-u's and Lahontan cutthroat trout with access to spawning grounds. The recovery team, headed by Earl Pyle of the U.S. Fish and Wildlife Service, says this was a key step toward restoration, but that "optimism must be tempered by concern for the quality of the habitat and utilization of the fishway by the cui-ui."

The recovery team notes that the reduced flow of water into the lake has resulted in a "greatly accelerated rate of accumulated total dissolved solids which, if continued, can be expected to have an enormous impact upon the biota of the lake." (Several species of snails in Pyramid Lake are now believed to be extinct.)

Recovery Plan Steps

Accordingly, the recovery plan is directed at both improving habitat and increasing the cui-ui population. Major recommended steps are as follows:

- Restore the Truckee River habitat, including reduction of water pollution and maintenance of the fishways.

- Determine optimum habitat conditions in Pyramid Lake and take appropriate actions to see that these conditions are restored or maintained.

- Augment the Pyramid Lake population with 2 million hatchery-reared cui-u's annually until natural reproduction is established.

- Establish viable subpopulations at other suitable sites if needed.

The cost of carrying out the plan is estimated at \$2.3 million through fiscal year 1980.

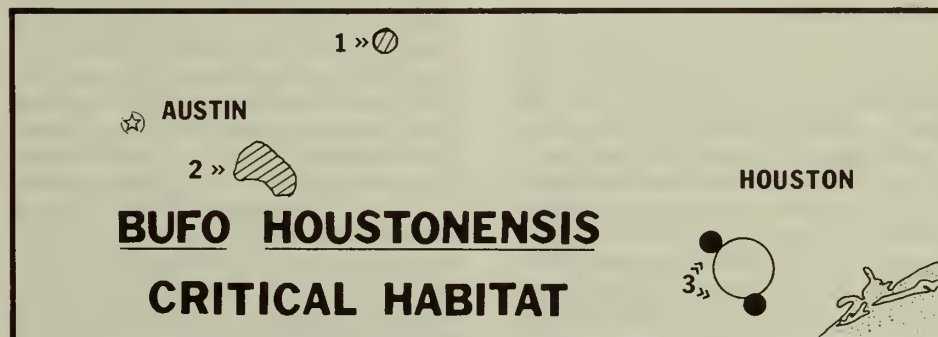
toad's habitat. He also suggested that public lands be evaluated for possible designation of Critical Habitat, in that such areas are unlikely to be encroached on by private developers.

The use of public lands as alternative toad habitat was also suggested by several organizations and individuals, including a spokesman for the Texas Parks and Wildlife Department and R. L. Lewis of the Texas Department of Highways and Public Transportation.

Lewis pointed out that some of the proposed localities in Harris County are already developed areas or fall directly in the path of current urban growth. Given that very little of the land proposed is under Federal control, he said privately financed ventures could adversely alter the toad's environment

irrespective of Critical Habitat designation. Lewis also recommended the inclusion of several additional areas as potential transplant sites.

The Service is now funding a \$10,300 status survey of the toad and its habitat needs in Harris County through the University of Houston. The surveyors will concentrate on locating toad tadpoles (easier to find than adult toads) and will use tape-recorded toad calls to stimulate "chorus" sounds so that they may determine if any Houston toads remain in the vicinity. If any of these areas are determined critical to the survival of the species, the Service will publish a final determination of Critical Habitat in Harris County at the appropriate time.



- 1 BURLESON COUNTY (final)
- 2 BASTROP COUNTY (final)
- 3 HARRIS COUNTY -- still under consideration (not finalized)

Eagle, Fox Squirrel Top Maryland's ES Agenda

Maryland's Nongame and Endangered Species program is picking up more momentum this year with Federally aided recovery efforts for the American bald eagle (*Haliaeetus leucocephalus*) and the Delmarva fox squirrel (*Sciurus niger cinereus*) re-evaluation priority.

Established under a 1972 State law, the Maryland Wildlife Administration's program is responsible for managing more than 400 species of nongame wildlife and 35 species listed as endangered, including 14 that also are protected under the Federal Endangered Species Act of 1973. The program has been expanding since Maryland signed a cooperative agreement with the U.S. Fish and Wildlife Service in 1976, qualifying the State for matching fund assistance which amounted to \$129,100 in fiscal year 1977, and is scheduled at \$186,800 for fiscal year 1978.

The State budget for the program totals \$51,800 in fiscal year 1978. To date, \$22,700 in 1978 Federal aid funds have been approved for allocation, and they will be used to strengthen State law enforcement, especially for four federally listed Endangered species: the bald eagle, Delmarva fox squirrel, American peregrine falcon (*Falco peregrinus*), and red-cockaded woodpecker (*Dendrocopos borealis*). Enforcement efforts will include the patrol of areas where these species exist, inspection of such business establishments as taxidermists and animal dealers to determine if Endangered species or their products are passing through, and training of law enforcement personnel to help them in the identification of protected species.

Eagle Comeback

Program manager Gary Taylor says the annual survey of the Chesapeake Bay bald eagle this spring should give some indication whether that part of the population nesting in Maryland is, in fact, making a comeback. Last year's census showed 47 young were hatched in 27 nests and 45 eaglets fledged—compared to only 13 hatched in 1970 in the State, while Virginia's eagle population remained depressed (see the August 1977 BULLETIN).

Major concentrations were found in Maryland's Dorchester County, where the Blackwater National Wildlife Ref-

uge is located (probably the most inaccessible and protected habitat area). Small stable populations exist in Charles and St. Mary's Counties.

When this year's eaglet production figures are tallied in mid-May, Taylor says, they should indicate whether the bird is finally overcoming the effects of pesticide contamination from DDT—the common cause of eggshell thinning over the past decade. The loss of suitable nesting habitat and disturbance by man remain as potential threats to the population.

Maryland's part in the recovery effort includes monitoring the breeding eagle population's status through annual aerial and ground surveys and re-checking active nest production, banding nestling eaglets to determine their movements, and gaining information on prey items, including the identification of contaminants. The latter work is done with the cooperation of the Service's Patuxent Wildlife Research Center, located in Maryland.

The State recently has succeeded in establishing protective zones around some eagle nests on private property through verbal agreements with the landowners. The use of formal "cooperative agreements" with the owners of prime eagle nesting sites is now being investigated to promote better protection from disturbance as well as habitat maintenance. In addition, the State is engaged in surveys to determine habitat that is essential for the eagle's continued survival as part of the design and implementation of a recovery plan for this federally Endangered species.

Delmarva Fox Squirrel

At the present time, the population size of the Delmarva fox squirrel, a "salt and pepper" subspecies that weighs up to 2 pounds (about twice the size of a common gray squirrel), has not been established. The squirrel once ranged through Pennsylvania, New Jersey, Delaware, and Virginia, but now appears to be confined principally to Maryland's Kent, Queen Anne's, Talbot, and Dorchester Counties adjacent to Chesapeake Bay's eastern shore. A number of the squirrels also exist in the Chincoteague National Wildlife Refuge along the Atlantic coast where they were transplanted in 1970 and 1973.

The subspecies' decline is linked to

loss of preferred habitat and changing land use patterns. Generally, the squirrel prefers to live in small wooded areas with large trees and sparse understory, such as hedgerows or other ecotonal areas bordering large fields. Road-kill mortality has been high because the squirrels often cross roads to reach agricultural fields where they feed on corn and other crops.

As a key part of the Federal-State recovery effort, Maryland has been building and testing out nesting structures for the fox squirrels to learn more about their needs and lifestyle. More than 2,000 boxes have been hung 15-20 feet above the ground in prime habitat zones to encourage breeding and to enable scientists to observe their activities as well as potential mortality factors, such as parasites.

The boxes are checked twice during the breeding season and again in December. An examination of 1,000 boxes last spring yielded in excess of 50 Delmarva fox squirrels—more than half of them young.

"It shows we are getting some reproduction and this is encouraging," Taylor says. He notes the habitat available for the squirrel also appears to have stabilized, which could be an indication that the population decline may have slowed.

To promote an expansion in the population, the State is creating new habitat near existing locations by mechanical clearing and controlled burning of understory vegetation in suitable woodlots. Individuals are being transplanted to new areas to establish new local populations.

In addition to surveying for critical habitat in Maryland, potential release sites for transplants are being examined in Delaware and the Virginia eastern shore by the wildlife agencies of these two states. Maryland also participated in drafting a recovery plan for the species.

Red-cockaded Woodpecker

An exploration is being conducted in eastern Maryland for any remnant colonies of the red-cockaded woodpecker. The last known colonies in the State were found in the Blackwater National Wildlife Refuge. In recent months, refuge personnel have identified some solitary birds, but as yet no colonies have been documented, Taylor says. The current survey involves identifying areas of potential habitat from vegetation maps, followed up by ground searches. The woodpecker nests mainly in small stands of mature long-leaved pines (such as loblolly) where the wood has been riddled by red heart disease (a fungus), which apparently enables the bird to carve out a nesting cavity. Taylor says all potential

habitat along the lower eastern shore of the bay has been mapped and the ground search is continuing in the most promising areas.

Even if no colonies are found, the study could locate habitat suitable for reintroduction of the woodpecker, whose known range now is limited to parts of perhaps a dozen Southeastern States.

Peregrine Falcon

Maryland is one of seven Eastern States cooperating in the attempt to reestablish breeding populations of the American peregrine falcon east of the Mississippi, where the raptor has not been known to nest since the 1950's. Maryland has erected hacking-out stations for the captive-born falcons produced by Cornell University, where they are fed and attended until they have fledged about 6-8 weeks later. Maryland's hacking stations are located at the U.S. Army's Aberdeen Proving Grounds under the supervision of Dr. Prescott Ward; at the State's Merkle Wildlife Management Area; and at the U.S. Navy's Patuxent Naval Air Station.

One male peregrine from the 1975 release at Aberdeen was observed in the vicinity of its hacking tower in 1977. Other releases were made in 1977 at Aberdeen and the Patuxent Naval Air Station. This year's plans call for a release at the Merkle site.

Maryland Darter

Another federally listed species—the Maryland darter (*Etheostoma sel-lare*)—may be the State's most Endangered species. The darter is known only in Deer Creek, in Harford County, where its numbers are extremely small. Only two adult specimens were found in 1977, and no young of the year were observed.

Presently, the darter is threatened by water degradation, including pollution, excessive turbidity, and lowering of the creek level, and by the proposed construction of a water treatment plant a quarter-mile above its only known habitat. The darter's recovery team, including a representative of the Maryland Fisheries Administration, is planning a survey of the nearby Susquehanna River to learn whether any additional populations are still in existence, and is revising an initial draft of a recovery plan. The Service is preparing a proposal to determine Critical Habitat for the darter.

State Listed Species

Federal funding is assisting studies in behalf of five State-listed species: the hellbender (*Cryptobranchus allenganiensis allenganiensis*), Jefferson salamander (*Ambystoma jeffersonia-*



Maryland surveys indicate bog turtle's status is improved

num), Eastern tiger salamander (*A. tigrinum tigrinum*), the bog turtle (*Clemmys muhlenbergi*), and the bobcat (*Lynx rufus rufus*).

The hellbender, a 2-foot-long salamander found only in the extreme western portion of Garrett County and in the Susquehanna River drainages, is entirely aquatic, preferring to live in swiftmoving streams with adequate detritus to hide under. Research on the hellbender (which is threatened by habitat contamination from introduced pollutants) is proposed for this spring. But work last year has already yielded new information about the status and distribution of the other two State-listed salamanders.

Jefferson Salamander

One of the long-toed mole salamanders, *A. jeffersonianum* is also found in several Northeastern and North Central States. Until last year, it was known only in seven breeding ponds in Maryland. But a survey that began in April located a total of 25 additional breeding ponds in mountainous Alleghany County in the western part of the State. One additional breeding pond was found in the eastern part of Garrett County, extending the salamander's known range in Maryland.

Adults, which measure 4 to 6 inches, inhabit deciduous wood lots and are subterranean. They migrate generally to small, shallow ephemeral ponds in the spring to lay eggs, which hatch in 30 days. The larvae remain in the water until late May, when they migrate back to the woodlots as subadults.

State biologists say the salamander's breeding sites are being lost by filling, sediment contamination, and draining for agricultural use. Survey efforts could assist in locating new habitat for egg and larvae transplants to start new populations if necessary.

Tiger Salamander

Although indicated in the scientific literature as one of the most abundant salamanders east of the Mississippi, *A. t. tigrinum* is in much the same loss-of-habitat predicament as the Jefferson salamander in Maryland. Once known in several eastern shore counties, this 6-7-inch salamander is now confined to a few breeding ponds in Kent County. Its existence in Maryland is threatened mainly by the loss of suitable habitat. (The only known western shore breeding pond was lost when filled for a golf course.)

Maryland's survey efforts have turned up only three additional breeding sites this year. But distribution surveys are continuing, and the State also is experimenting with transplants to establish new populations in additional ponds. A drought that dried up receptor ponds before the larvae could transform and migrate disrupted an attempt last year at transplanting egg masses (which had been placed in screened boxes to allow the free-flow of the water and essential nutrients). A new attempt is expected this spring if abundant egg masses are available.

Bog Turtle

Maryland's studies of the distribution
(continued on next page)

and status of the bog turtle (conducted with cataloging assistance from the U.S. Department of Agriculture's Soil Conservation Service) have revealed turtle populations in northern parts of eastern Maryland, where a correlation has been found between soil types and the occurrence of turtles. In fact, surveys indicate that the species may be doing better than previously believed. The turtle, which commonly has orange head patches and a carapace measuring up to 4.5 inches, prefers to live in wet meadow areas where it feeds on insects and other arthropods. Because of dense vegetation in these areas, however, the species is generally very difficult to sight.

Endangered species program manager Taylor says the turtle has been subjected to commercial exploitation for the pet trade because it is listed in scientific literature as one of the rarest turtle species, and because it adapts well to captivity. Loss of habitat from development and urbanization has also posed a serious threat. (It is listed on Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, where its export is prohibited if determined to be detrimental to the species' survival,

and is also protected in the States of New York and Pennsylvania.)

Maryland's fieldwork on the turtle in Baltimore County is almost complete, with 24 new population sites having been located. The turtle has been found in 51 sites in Carroll County, and 55 sites have been located in Harford County. Fieldwork is just beginning in Cecil County, where the search will continue in full force during May-September when the turtles are most active. Because the turtle appears to be more secretive than rare in Maryland, Taylor says a recommendation may be made to reclassify it after further study.

Other Studies

Research on the few bobcat populations remaining in the western part of the State was started only recently. The State is now documenting sightings and other evidence indicating bobcat habitat. In addition, the State is planning a cave survey and census of the Indiana bat (*Myotis sodalis*), a federally protected Endangered species which was known to exist in two caves in Washington and Garrett Counties in western Maryland as late as 1964. The bat is threatened throughout its range by habitat destruction, pesticide contamination, and disturbances of its nesting colonies.

Program Administration

The Nongame and Endangered Species Program is coordinated and administered by the Maryland Wildlife Administration, a division of the State Department of Natural Resources. Taylor supervises a project leader and five conservation assistants who are employed by the program for specific project assignments.

Maryland is assisted in its conservation efforts through contracts with the University of Maryland, the National Wildlife Federation, and other recognized authorities.

In the nongame area, the program is trying to improve and implement land use management techniques so that developers and property owners can enhance conditions for nongame wildlife. Other program activities include:

- support of a program to rehabilitate injured raptors
- a federally funded public information and education project on Endangered species
- advisory assistance on handling nuisance animal problems
- permit issuance (largely for scientific collecting)

The program is supported by the State through conservation funds which are provided out of general tax revenues.

Forest Service, BLM Set Policies on ES in California

The U.S. Forest Service has issued a directive establishing the agency's regional policy for the conservation of animal species listed as Endangered or Threatened in California by the U.S. Fish and Wildlife Service.

The directive also provides for the conservation of species listed by the State of California as rare or endangered, and for sensitive species that have been determined to be in need of special management on lands in the national forests.

Presently, there are 79 species within these four categories in the State—42 of them occurring in national forests. The latter 42 will receive top priority management, the agency said.

Copies of the directive may be obtained by writing to the Director, Fisheries and Wildlife, U.S. Forest Service, R-5, 630 Sansome Street, San Francisco, California 94111.

BLM Policy on Plants

The Bureau of Land Management (BLM) of the U.S. Department of the Interior has recently published a policy for conserving rare, threatened, or endangered plants on public lands in California. The policy was developed in

anticipation of a pending U.S. Fish and Wildlife Service ruling that would provide protection for approximately 1,779 U.S. plants, about 270 of which are known to occur in California.

Copies of the policy may be obtained from the Bureau of Land Management, Federal Office Building, 2800 Cottage Way, Sacramento, California 95825.

ESSA Report on Bobcat, Lynx, River Otter Nears Completion

A special working group of scientists is preparing a set of recommended criteria and guidelines for the U.S. Endangered Species Scientific Authority (ESSA) on regulating the export of bobcat, lynx, and river otter pelts.

A meeting of the group, chaired by L. David Mech of the North Central Forest Experiment Station, St. Paul, Minnesota, was held January 23-25 at New Orleans to prepare a draft report. The session, which was open to the public, sought to determine as specifically as possible the biological information and management programs needed to ensure that harvests of the three species will not be detrimental to their survival or to the maintenance of the species' normal roles in the environment.

Several representatives of state

wildlife agencies, conservation organizations, and user groups participated in a day-long discussion of the draft report on the third day of the meeting. They were asked to submit comments in writing for incorporation into the final report, which is scheduled for completion by April 1.

The National Science Foundation, the ESSA member that sponsored the New Orleans meeting, will publish the final report. Copies will be obtainable from William E. Sievers, Biological Research Resources Program, National Science Foundation, Washington, D.C. 20550.

In the meantime, ESSA expects to publish findings concerning the export of bobcat, lynx, and river otter pelts in the *Federal Register* during February. These findings will include the establishment of export quotas for the three species from several states, in line with ESSA's responsibility to determine that export will not be detrimental to the species' continued survival in the United States.

The three species are listed in Appendix II of the Convention on International Trade in Endangered Species and Wild Fauna and Flora. This category consists of species which, although not now necessarily threatened with extinction, may become so unless their trade is regulated and monitored.

Rulemaking Actions—January 1978



Photo by Robert H. Mount

Black market trade has depleted indigo snake in Florida

Eastern Indigo Snake

The eastern indigo snake (*Drymarchon corais couperi*) has been listed as Threatened in a final rulemaking issued by the Service (F.R. 1/31/78).

Scheduled to take effect on March 3, 1978, this ruling is substantially the same as the proposal published in the *Federal Register* on August 1, 1977 (see August 1977 BULLETIN).

The eastern indigo snake is in great demand by the pet trade, and its recent decline is attributable largely to commercial exploitation. Once found in the Southeast from Mississippi to South Carolina, the subspecies is now limited to Florida and Georgia. Threatened status will provide it with Federal protection throughout its historical range.

Comments on the original proposal were received from a total of 29 individuals, most of them associated with various governmental or private organizations. Full support for Threatened status was expressed by more than 20 of these respondents, including the Governors of Alabama and Mississippi.

Replying on behalf of the Governor of Florida, the director of the Florida Game and Fresh Water Fish Commission emphasized that, although the subspecies is protected under State law, the Florida population is being depleted by continued black market trading.

Several respondents commented on the adverse effects of so-called rattlesnake roundups conducted in the Southeast, which involve pouring gasoline down gopher tortoise burrows to drive out rattlesnakes. Unfortunately, many snakes, including the eastern indigo, are killed by this practice.

Some opponents suggested alternative approaches, including reliance on the prohibitions of the Lacey Act and on existing state laws, as well as prevention of habitat destruction and possibly the creation of substitute habitat. In addition, suggestions were made that Threatened status not be accorded the South Florida population.

After an indepth analysis of all comments received, the Service arrived at the following conclusions:

- Neither existing state laws nor the provisions of the Lacey Act would provide the eastern indigo snake with sufficient protection. Threatened status under the Endangered Species Act of 1973 will give the subspecies protection throughout its historical range and will prevent dealers from taking refuge in claims that their specimens come from unprotected populations.

- Under the 1973 act, it will be possible to formulate management plans for the subspecies, and money can be made available from the Land and Water Conservation Fund for habitat acquisition, although more data will have to be assembled before Critical Habitat can be determined.

- It is recognized that not every local population of the snake is threatened with becoming endangered; for example, some populations in South Florida are not in decline. However, when considered throughout its range, the snake does need to be designated as Threatened.

- The Service does not have the legal right to prohibit rattlesnake roundups, but it does believe that the Southeastern States involved should regulate the practice to provide added protection for the eastern indigo snake.

Leopard Darter

In a final rulemaking on the leopard darter (*Percina pantherina*), the Service has determined that the fish should be listed as Threatened and that part of its range should be designated as Critical Habitat (F.R. 1/27/78). The ruling takes effect on February 27, 1978.

Need for Protection

Formerly the leopard darter was found in large streams throughout the drainage basin of the Little River (a tributary of the Red River) in the upland areas of southeastern Oklahoma and southwestern Arkansas.

In recent years, the species has declined in both numbers and distribution as a result of habitat alteration, principally the construction of impoundments, and water quality deterioration.

Consequently, the leopard darter is now limited principally to the Little

River above Pine Creek Reservoir, Glover Creek, and Mountain Fork above Broken Bow Reservoir. In addition, the species has recently been discovered at three locations in the Cosatot River. However, as two of these locations are both below the newly completed Gillham Dam (the third is above the dam), they should not be considered as capable of supporting viable populations, in that downstream populations do not usually survive upstream impoundments.

The Glover Creek leopard darter population appears to be sufficiently strong and viable for the Service to favor listing the species as Threatened rather than Endangered. Glover Creek offers the species good water quality and good habitat—clear, swift shoal areas with gravel and gravel-and-sand bottoms.

However, the proposed Lukfata Reservoir impoundment on Glover Creek would be likely, in the Service's view, to result in the elimination of most of this population.

Comments on Proposal

A proposed rulemaking recommending Threatened status and Critical Habitat designation for the leopard darter was published in the *Federal Register* on July 6, 1976.

Subsequently, the Service received a total of 25 comments from various governmental and private organizations and individuals. The majority of these comments expressed general support for the proposal.

The U.S. Army Corps of Engineers recommended that action on the ruling be suspended pending extensive studies by the Fish and Wildlife Service and preparation of an environmental impact statement.

Conclusions

After reviewing all of the comments and biological information received on the leopard darter, the Service concluded that sufficient data are available to warrant listing the species as Threatened and that a portion of the fish's range should be designated as Critical Habitat as proposed, but modified in keeping with the comments of the Governor of Oklahoma, the U.S. Forest Service, and a professional biologist.

The Service also stated that the ruling "is not a major Federal action which would significantly affect the quality of the human environment within the meaning of Section 102(2)(C) of the National Environmental Policy Act of 1969, thus it does not require an Environmental Impact Statement."

Pending Rulemakings

The Service expects to issue rulemakings and notices of review on the subjects listed below during the next 90 days. The status or action being considered for each final and proposed rulemaking is given in parentheses.

The decision on each final rulemaking will depend upon completion of the analysis of comments received and/or new data made available, with the understanding that such analysis may result in modification of the content or timing of the original proposal, or the rendering of a negative decision.

Pending Final Rulemakings

- Bald eagle (modification of status in Lower 48 States)
- 27 snails (E, T)
- 6 butterflies (C.H.)
- Contra Costa wallflower and Antioch Dunes evening primrose (C.H.)
- 13 plants (E, T)
- Grizzly bear (C.H.)
- Gray wolf (reclassification to T in Minn., C.H.)
- 15 crustaceans (E, T)
- Whooping crane (C.H.)
- Black toad (T, C.H.)
- Mona boa (T, C.H.)
- Mona ground iguana (T, C.H.)
- New Mexican ridge-nosed rattlesnake (T, C.H.)
- 2 zebras (E)
- Socorro isopod (E)
- Little Kern golden trout (T, C.H.)
- Greenback cutthroat trout (reclassification to T)

Pending Proposed Rulemakings

- 10 North American beetles (E, T)
- 2 harvestmen (E, T)
- 3 mussels (C.H.)
- Rocky Mountain peregrine falcon population (C.H.)
- Colorado squawfish (C.H.)
- Virgin River chub (E, C.H.)
- 2 Hawaiian cave invertebrates (E, T)
- Leatherback sea turtle (C.H.)

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	36	227	263	2	17	19
Birds	68	144	212	2		2
Reptiles	10	46	56	4		4
Amphibians	5	9	14	2		2
Fishes	30	10	40	10		10
Snails		1	1			
Clams	23	2	25			
Crustaceans						
Insects	6		6	2		2
Plants	4		4			
Total	182	439	621	22	17	39

Number of species currently proposed: 111 animals

1,867 plants (approx.)

Number of Critical Habitats proposed: 41

Number of Critical Habitats listed: 24

Number of Recovery Teams appointed: 59

Number of Recovery Plans approved: 14

Number of Cooperative Agreements signed with States: 21

January 31, 1978

- 4 Alabama and Georgia fishes (E, C.H.)
- Puerto Rican whip-poor-will (C.H.)
- Laysan duck (C.H.)
- Bonytail chub (E)
- Razorback sucker (T)
- West African manatee (T)
- 20 Appendix I spp.
- Cui-ui (C.H.)
- Whooping crane (C.H.—additional areas)
- Illinois mud turtle (E, C.H.)
- Key mud turtle (E, C.H.)
- Plymouth red-bellied turtle (E, C.H.)
- 5 Ash Meadow plants (C.H.)
- 7 California and Oregon freshwater fishes (E, T)
- 23 foreign mammals and 1 bird (E)
- Light-footed clapper rail and yellow-shouldered blackbird (C.H.)

Abbreviations: E=Endangered, T=Threatened,
C.H.=Critical Habitat

March 15 Hearing Set On Southeastern Fishes

The Service has announced that it will conduct a public hearing March 15 on its proposal to list four small fishes found in Alabama and Georgia as Endangered and to designate their Critical Habitat (F.R. 2/6/78).

The hearing will be held 9 a.m. to 3 p.m. and from 7 p.m. to 9 p.m. in the Cudworth Building Auditorium, 1919 8th Avenue South, at the University of Alabama, Birmingham. Because of wide interest in the proposal covering the Cahaba shiner, spring pygmy sunfish, pygmy sculpin, and goldline darter, the Service also has extended the comment period from January 30 to March 31. (See the December 1977 and January 1978 issues of the BULLETIN.)



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

Two Offshore Oil Leases Cleared— With ES Safeguards

Biological opinions have been issued by the Service stating that proposed sales of two outer continental shelf (OCS) oil leases by the Bureau of Land Management (BLM) are "not likely" to jeopardize 14 Endangered or Threatened species—on the basis of available information.

The opinions, requested by the BLM under the recently promulgated section 7 regulations of the Endangered Species Act of 1973, were the first prepared by the Service in connection with offshore oil development.

But the Service observed that the situation with regard to jeopardy could change during subsequent exploration and development phases of the projects, requiring additional consultations on the part of affected Federal agencies. One of the proposed leases (OCS Sale No. 43) is in the Atlantic off the Florida coast and the other (OCS Sale No. 45) is in the Gulf of Mexico.

Future Threats

As an example of an activity that might cause a problem—and require future consultation—the Service cited increased boating by crews and service vessels shuttling back and forth from the mainland to oil rigs at sea.

"Should this type of activity occur in the Jacksonville (Florida) harbor or the mouth of the St. John's River, which comprise part of the Critical Habitat of the Endangered Florida manatee, it may jeopardize the continued existence of that species or result in the destruction or modification of its Critical Habitat. Another example would be the location of onshore facilities sufficiently close to the Critical Habitat of the dusky seaside sparrow in Brevard

(continued on page 3)



Photo by G. Ronald Austing

Bald Eagle's Status Listed For 48 States

The Service has issued a final rulemaking, effective March 16, that determines the bald eagle (*Haliaeetus leucocephalus*) to be Threatened in five States (Michigan, Minnesota, Oregon, Washington, and Wisconsin) and to be Endangered in the remaining 43 conterminous States (F.R. 2/14/78).

The effect of this ruling is to extend the protective provisions of the Endangered Species Act of 1973 to all bald eagles throughout the Lower 48 States. Hawaii is excluded because the species does not occur there. Alaska, which has about ten times as many breeding bald eagle pairs as all the other states combined, also is not covered by the rulemaking.

Background

The southern bald eagle (*Haliaeetus leucocephalus leucocephalus*) was listed as Endangered in 1967. The northern bald eagle (*Haliaeetus leucocephalus alascanus*) was not listed,

primarily because the relatively large Alaskan population was not known to be in danger. Furthermore, at that time, it was not possible legally to list a population segment; nor was there yet a Threatened category. The 40th parallel was arbitrarily selected, principally for administrative convenience, as the dividing line between the southern and northern subspecies.

By 1976, the Service had determined that the dividing line was causing confusion because the southern and northern populations moved back and forth across the line during nonbreeding periods and that there was no geographical or morphological basis for subspecies classification. In addition, the Service determined that Federal protection under the 1973 act should be extended to the bald eagle population in the northern parts of the 48 conterminous states. Accordingly, the Service issued a proposed rulemaking

(continued on page 9)

Regional Briefs

Regional Endangered Species Program staffers report the following summary of activities in their areas:

Region 2. A \$2,100 contract has been awarded the Houston Zoo to artificially propagate the Houston toad (*Bufo houstonensis*). This spring, the zoo plans to collect 6 to 10 adult toads and, using reproduction techniques well established for the genus *Bufo*, try to produce several thousand young for release next spring back into the areas where the adults were found. Some of the young toads also may be placed on Federally controlled lands, such as Ellington Air Force Base, and around Addicks Reservoir in Harris County, which are part of the species' historical range.

Thirteen humpback chubs (*Gila cypha*) were collected in late January from the Colorado River in the Grand Canyon, airlifted to the south rim of the canyon by helicopter, and driven to the Willow Beach National Fish Hatchery in Arizona for captive propagation. At present, pure populations of this En-

dangered species are known in only three locations. The Service plans to release the hatchery-reared chubs into parts of their historical range. The Colorado squawfish (*Ptychocheilus lucius*) and razorback sucker (*Xyrauchen texanus*) also are being propagated at Willow Beach for reintroduction into their former waters.

Region 3. A habitat survey for the Kirtland's warbler (*Dendroica kirtlandii*) in Wisconsin started in February under a joint venture by the fish and wildlife departments of Wisconsin and Michigan. In Michigan, the warbler is found in habitat having sandy soil, stands of jack pine 10-20 years old, and an understory of blueberry plants. Similar habitat will be searched out in Wisconsin and tapes of the male bird calls will be played to attract any warblers present. The project is assisted by Federal grant-in-aid funding from the Service.

Region 5. Contracts are being negotiated with members of the Endangered Species Committee of the New England Botanical Club to prepare reports on endangered and threatened plants in each of the six New England States.

Garland Ross and Ray Haulsee have been named recipients of the Service's Citizen Award in recognition of their efforts to protect the Virginia round leaf birch (*Betula uber*) by erecting fences around the recently rediscovered trees.

Region 6. A draft of the recovery plan for the Northern Rocky Mountain wolf (*Canis lupus irrenotus*) is under review. Comments are due by the end of March.

The regional office has compiled a list of candidate threatened and endangered plant species and the refuges on which they may occur. The compilation will be distributed to refuge personnel to serve as a "watch list" until the status of these species is officially determined.

Alaska Area. A raptor workshop concentrating on protection of the arctic peregrine falcon (*Falco peregrinus tundrius*) was conducted in Fairbanks on February 6-7 by special agents of the Service's Division of Law Enforcement. More than 60 persons attended, including representatives of agencies in Canada, which also are experiencing increasing enforcement problems in protecting falcons.

Samples have been collected from all 174 of the Aleutian Canada goose (*Branta canadensis leucopareia*) propagation stock on Amchitka Island for analysis of avian diseases. The work was performed by Forrest Lee of the Northern Prairie Wildlife Research Laboratory and the Aleutian Island National Wildlife Refuge staff.

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NM 87103 (505-766-2321): W. O. Nel-
son, *Regional Director*; Robert F. Ste-
phen, *Assistant Regional Director*;
Jack B. Woody, *Endangered Species
Specialist*.

Region 3, Federal Bldg. Fort Snelling,
Twin Cities, MN 55111 (612-725-3500):
Jack Hemphill, *Regional Director*; Del-
bert H. Rasmussen, *Assistant Regional
Director*; James M. Engel, *Endangered
Species Specialist*.

Region 4, P.O. Box 95067, Atlanta, GA
30347 (404-881-4671): Kenneth E.
Black, *Regional Director*; Harold W.
Benson, *Assistant Regional Director*;
Alex B. Montgomery, *Endangered
Species Specialist*.

Region 5, Suite 700, One Gateway Cen-
ter, Newton Corner, MA 02158 (617-
965-5100): Howard Larsen, *Regional
Director*; James Shaw, *Assistant Re-
gional Director*; Paul Nickerson, *En-
dangered Species Specialist*.

Region 6, P.O. Box 25486, Denver Fed-
eral Center, Denver, CO 80225 (303-
234-2209): Harvey Willoughby, *Re-
gional Director*; Charles E. Lane, *As-
sistant Regional Director*; John R.
Davis, *Endangered Species Specialist*.

Alaska Area, 813 D Street, Anchorage,
AK 99501 (907-265-4864): Gordon W.
Watson, *Area Director*; Dan Benfield,
Endangered Species Specialist.

Symposium Planned On Virginia's Wildlife

A symposium on the endangered and threatened flora and fauna of Virginia will be held on the campus of the Virginia Polytechnic Institute and State University, at Blacksburg, Virginia, on May 19-20.

Sponsored by the university's Center for Environmental Studies, the symposium is intended to help create a list of Virginia plants and animals deemed endangered, threatened or otherwise of concern. The biological data assembled will form the basis of a comprehensive publication, which will also include suggestions for research, education, and management.

Further information on the symposium may be obtained from Don Linzey, Center for Environmental Studies, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061.

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Masked Bobwhite Recovery Plan Approved

A recovery plan calling for the maintenance of self-sustaining populations of the Endangered masked bobwhite quail (*Colinus virginianus ridgwayi*) in the Southwest has been approved by the Service.

Under the plan proposed by the recovery team, headed by David E. Brown of the Arizona Fish and Game Department, two efforts would be undertaken simultaneously:

1. Reestablishment of a self-sustaining population in Arizona, where the bird was essentially extirpated about 80 years ago as a result of habitat destruction caused primarily by excessive livestock grazing.

2. Maintenance of a viable population in the neighboring Mexican state of Sonora, where the quail has managed to survive in the wild, albeit in dwindling numbers.

Reestablishment in Arizona

The recovery plan proposes a two-phase approach in Arizona. The first phase would consist of acquiring (through cooperative agreement, lease, or purchase) an area or areas suitable for a management reserve, where birds can be released and studied in a protected environment.

Covering at least 3,000-5,000 acres, the reserve would be located within the historical range of the quail. Fencing, livestock control, scrub eradication, revegetation, and other measures would be taken to provide a habitat conducive to the masked bobwhite but not to competing birds.

Conditioned, propagated masked bobwhite stock would be released within the reserve in the hope of creating an established wild population. Stock for release will come from the Patuxent Wildlife Research Center, in Maryland, where masked bobwhite have been reared in pens since the late 1960's (see November 1977 BULLETIN), and then shipped to a field station in the Altar Valley for conditioning before their release to the wild.

Subsequently, the status of the reserve's masked bobwhites would be determined by call counts, brood surveys, and other techniques. If and when the status reaches that of an established, self-sustaining population, the second phase would be implemented.

The second phase consists of setting up a permanent refuge, acquired through purchase, for the subspecies.

Maintenance in Mexico

As outlined in the recovery plan, the Service would continue to cooperate

with Mexico in monitoring the status and distribution of masked bobwhites, as well as their habitat conditions and population trends. The Service has been working with Mexican representatives and appropriate private concerns in an effort to insure the continued survival of the species in Mexico.

Program Costs

Through fiscal year 1978, the recovery team estimates total expenditures on the bird's recovery effort at \$384,500. This includes \$280,000 for reestablishing the Arizona population and the remainder for maintaining the Mexican population.

Background

When first collected in 1884, the masked bobwhite quail was known to occur in small, scattered areas of extreme south-central Arizona and in more extensive areas of Sonora. Thereafter, however, excessive livestock grazing and extended drought conditions rapidly destroyed the bird's natural grassland habitat. By 1900, the subspecies was essentially extirpated in Arizona; by 1950, it appeared to have suffered the same fate in Sonora.

Although the quail was rediscovered in Sonora in 1964, subsequent surveys indicated that the Mexican populations were limited to two areas and they were—and are—probably declining in numbers owing to continued overgrazing, drought, and scrub invasion of the denuded grasslands.

Between 1937 and 1950, several attempts were made to reestablish the quail in Arizona, but they all failed—principally, in the view of the present recovery team, because most of the releases were made well outside the bird's historical range. Sporadic attempts were made again after the 1964 Sonoran rediscovery, but these also proved unsuccessful.

In 1966, two Arizonans donated four pairs of pen-reared masked bobwhites to the Bureau of Sport Fisheries and Wildlife. Together with 57 wild birds captured in Sonora in 1968 and 1970, these became the original breeding stock for the Patuxent Wildlife Research Center.

Prior to 1974, the Patuxent-reared bobwhites were released to the wild with little or no conditioning, and most of them dispersed and/or disappeared within two months of release. A few birds did live as long as one year, and there was also one documented case of reproduction in the wild.

Beginning in 1974, the Patuxent researchers developed a screening and conditioning program for the masked bobwhite. Their techniques included modifications of the call-box or call-pen conditioning methods and also modified adoption methods. The most promising of the latter has involved imprinting masked bobwhite chicks on sterilized Texas bobwhite (*C.v. texanum*) foster parents. Under this new program, only those birds judged capable of surviving in the wild are released.

As of October 1977, a few coveys had become established in the wild in Arizona. However, as reported by the recovery team, it is uncertain whether or not these coveys will survive and reproduce in a feral state.

Conclusions

The recovery plan incorporates certain activities, such as the implementation of appropriate land management practices in Arizona and status determination in Sonora, that are already initiated and ongoing. Also, farseeing livestock operators and other land owners have been instrumental in helping the team carry out recovery efforts for the species. Consequently, the Service believes that, with continued cooperation, it may soon be successful in its attempts to save the masked bobwhite.

However, as the recovery team noted, "the bird's absence from historical range in the United States poses one of the most intriguing wildlife management challenges yet encountered. No protective measures will suffice. The restoration of a bird to a now altered ecological niche is called for; a goal perhaps readily feasible, perhaps impossible."

Oil (continued from page 1)

County, Florida, to adversely impact that species," the Service noted in a memorandum to the United States Geological Survey (USGS). The USGS is the Federal agency responsible for overseeing offshore oil exploration and development at leased sites.

The Endangered and Threatened species reviewed by the Service for potential adverse effects, in addition to the manatee and dusky seaside sparrow, were as follows:

Bachman's warbler, American alligator, brown pelican, bald eagle, arctic peregrine falcon, the leatherback, hawksbill, and Atlantic ridley sea turtles, red wolf, whooping crane, Attwater's prairie chicken, and Mississippi sandhill crane.

The reviews were performed by a team of Endangered Species Program biologists and administrative staff.

New Projects, Agreements Boosting Endangered Species Protection Are Taking Hold in Foreign Lands

Many divisions and offices of the U.S. Fish and Wildlife Service perform endangered and threatened species functions under the Endangered Species Program. The following article discusses the important services provided by the International Affairs (IA) office staff in support of the program.

Ron Sauy of the International Crane Foundation (ICF) is flying to Moscow in June to pick up a dozen eggs of the Endangered Siberian white crane (*Grus leucogeranus*). He will carry the eggs—which will have been collected a few hours before near Yakutia, Siberia, by Soviet biologists—to the University of Wisconsin for artificial incubation.

The 20,000-mile roundtrip journey, arranged by the U.S. Fish and Wildlife Service under an environmental cooperative agreement between the United States and the Soviet Union, will launch a captive breeding program aimed at establishing a new flock of the cranes that would migrate between Siberia and Iran. Only an estimated 350 of the birds presently remain in the wild.

Also this spring, the Service—jointly with the National Park Service (NPS)—anticipates the initiation of about 40 projects in India and Pakistan to assist in the protection and management of such Endangered species as the Asian elephant (*Elephas maximus*), the great Indian rhinoceros (*Rhinoceros unicornis*), Asiatic lion (*Panthera leopersica*), black buck (*Antelope cervicapra*), and a number of birds, crocodiles, and marine turtles.

During the year, Service representatives will participate in workshops sponsored by the Organization of American States (OAS) in an effort to lay the groundwork for implementing the Convention on Nature Conservation and Wildlife Preservation in the Western Hemisphere—a goal set by President Carter in his environmental message to Congress last May 23. The Convention would establish wilderness parks and reserves, and give needed protection to endangered species and migratory birds in all the Americas.

These and many more activities supporting the protection of endangered wildlife in other nations around the world are part of the Service's long-standing involvement in international programs for wildlife conservation. That involvement dates back to 1916



Photo by Gerard A. Bertrand

Only a very limited number of the Endangered Asiatic lion remain in the Gir Forest at Gujarat, India

with the adoption of a treaty by the United States and Great Britain (acting for Canada) to protect certain species of game birds that migrate between the U.S. and Canada. This agreement led to passage of the Migratory Bird Treaty Act of 1918, in which Congress provided for the first Federal game bird refuges. Treaties covering Endangered and Threatened species of migratory wildlife, as well as birds, also have been executed with Mexico (1936) and Japan (1972). Ratification of a fourth migratory bird treaty, with the Soviet Union (signed in November, 1976), is pending.

International Affairs Office

Foreign wildlife conservation activities are coordinated by the Service's International Affairs office, which has a staff of nine persons and a budget of \$351,000 for FY 1978 (an increase of \$93,000 over FY 1977).

Dr. Gerard A. Bertrand, a zoologist, marine ecologist, and lawyer, was recently appointed chief of the office, having served at the Council on Environmental Quality as science advisor to Presidents Nixon, Ford, and Carter prior to joining the Service.

Bertrand, 34, believes the Service enjoys "remarkable opportunities to help advance the cause" of wildlife protection around the globe by virtue of the Endangered Species Act, and other laws and treaties, including U.S. participation in the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

By the same token, he notes the leaders of developing nations, which still retain reasonably high populations of wildlife, realize in many instances

"they have a bountiful resource, one which we are now trying to regain," and want to keep it.

Excess Foreign Currencies

In passing the Endangered Species Act of 1973, Congress expanded the Service's international role by authorizing assistance to the programs of foreign nations which the Secretary of the Interior determines to be "necessary or useful" to the conservation of any species listed as Endangered or Threatened. Moreover, Congress, in section 8 of the act, authorized the use of U.S.-owned foreign currencies, whenever available, to fund these assistance programs.

U.S. holdings of foreign currencies or credits accumulate in some countries through the sale of surplus agricultural commodities under the Agricultural Trade Development and Assistance Act of 1954 (Public Law 83-480) and by the repayment of loans. These monies are used to fund U.S. foreign aid programs, which must be carried out in the host countries.

A portion of the funds may be declared as excess by the U.S. Treasury whenever the amount held is sufficient to meet all U.S. Government requirements for two years. These "excesses" may then be applied to optional assistance programs, such as those developed for endangered species protection. Countries currently declared as having excess foreign currencies include Egypt, Pakistan, India, Burma, and Guinea.

Approved Programs

The Service initially proposed programs devoted to the preservation of

endangered species and their ecosystems for Egypt, Pakistan, and India for FY 1976. Congressional approval was obtained for expenditure by the Service of \$600,000 in excess currencies for the three countries in FY 1977. In FY 1978, Congressional authorizations have increased those funds to a total of \$413,000 for Egypt, \$225,000 for Pakistan, and \$446,200 for India.

The Endangered Species Program has long practiced the philosophy that anything foreign countries can do to educate the public and protect habitat is serving the needs of endangered and threatened species. Thus, the approach has been to allow the various countries to set up their own priorities and programs for funding with excess foreign currencies.

The Service acts in the role of advisor, monitoring the progress of projects, and assisting in project modification when necessary.

Contracts with Egypt

A joint Service/NPS team made the first attempt at implementing the excess currency program during a visit to Egypt in April 1977. At present, Egypt has some wildlife protection laws, but they are not adequately enforced. Unlike India and Pakistan, which have some natural areas set aside for wildlife, Egypt has no parks, refuges or preserves, and has no one agency responsible for wildlife management and nature protection. Nonetheless, an increasing awareness of the need for ecological and conservation programs is occurring among Egyptian government officials.

For example, endangered species conservation—and the wisdom of preserving genetic strains of plants and animals as a hedge against future crop disasters—has become a television discussion topic in the country during recent months.

As a result of the FWS/NPS team visit last year, three contracts amounting to about \$200,000 have been signed with the director of Cairo's Giza Zoo. One of the contracts enables Egypt to organize an international workshop where scientists from around the world can bring their expertise to bear on solving its conservation problems. The meeting will be held in the fall in Cairo and, it is hoped, will prove a "shot in the arm" to developing a national wildlife protection program.

A second project entails the preparation of public awareness plans to be presented at three different funding levels, one of which will be implemented later according to the amount of excess foreign currencies available.

A third project will fund surveys and the gathering of data for listing additional species, developing wildlife management plans, and proposing areas to be set aside as parks or protected regions.

Part of the latter project called for a visit by the principal investigators to the United States. Dr. Hassan Hafez, director of the Cairo zoo, and Dr. A. Maher Ali, professor of plant protection at Assuit University, presently are touring parks and refuges in the southwest U.S., learning about our facilities, technical expertise, and management approaches to desert ecosystems believed to be similar to those in Egypt. This familiarization is planned to assist the Egyptians in developing a comprehensive endangered species conservation plan for their country.

India and Pakistan

The Service and NPS sent study teams to India and Pakistan in January and February 1978, respectively, to initiate programs in these two countries. Bertrand, who led the combined mission to India, is scheduled to return to India late in May to negotiate contracts. As many as ten priority projects involving an estimated \$400,000 in excess foreign funds could be set up.

One of the proposed projects will establish a visiting lecturer position at India's Institute of Forestry to offer instruction in the basics of wildlife management, and particularly the conservation of endangered species. Other proposed projects involve research, in-

cluding surveys to determine if additional species should be listed for protection (India now has 45 species listed as Endangered or Threatened—24 mammals, 9 birds, and 12 reptiles). Studies have also been proposed on animal diseases, habitat identification and classification, and habitat alteration as it affects endangered species.

Additional projects have been proposed for the development of protective legislation, captive breeding, and habitat management. The program anticipates on-the-job training for wardens and administrators and the development of formal educational curricula at universities and secondary schools, plus bringing the plight of endangered species to the attention of the general public.

Similar activities have been proposed by officials of Pakistan, which has 21 listed Endangered species (12 mammals, 2 birds, and 7 reptiles). The government of Pakistan has already developed a national conservation plan, and identified about 20 projects which may receive funding through the excess foreign currency program. As in India, the projects selected for funding are designed to assist Pakistan with research, management, training, and public awareness efforts.

Program Potential

As for future projects, Lawrence N. Mason, deputy chief of the International Affairs office and team leader of the 1977 U.S. mission to Egypt, says

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Photo by Gerard A. Bertrand

The lion-tailed macaque is now found in the wild only in the western Ghats Mountains near the tip of India's peninsula. Population was estimated in 1968 at less than 1,000.



Photo by Gerard A. Bertrand

This young mugger crocodile is one of a number being raised in captivity by India for reintroduction into the wild

plans are being discussed to create regional wildlife management training centers in India, Pakistan, and Egypt. This would expand the impact of the excess foreign currency program beyond the borders of these countries by using the centers to instruct personnel from neighboring nations.

Mason says the program could finance construction of the training center facilities. Some funds for this purpose may be available from the Agency for International Development institution-building program.

In India, Pakistan, and Egypt, he adds, excess foreign currencies also could be used to erect buildings for the conduct of research and to house administrative staffs, as well as for the purchase of habitat for Endangered species. "We even may be able to endow chairs at universities in wildlife management. That would be a novelty for the U.S. Government."

David Ferguson, a wildlife biologist and coordinator of the excess foreign currency program, sees great leverage in the program. "These excess currencies would be used for some other purpose if we couldn't use them for endangered species conservation. The small amount of Service manpower and money involved is a good investment for the high potential amount of wildlife habitat protection obtained."

U.S.-Soviet Cooperation

Wildlife and ecosystem protection are important aspects of the U.S.-USSR Agreement on Cooperation in the Field of Environmental Protection, which also includes scientific exchanges on such matters as the control of air and water pollution, control of pesticides, protection of the marine environment, and earthquake prediction. The agreement, signed in 1972, was renewed for another five years in 1977.

While wildlife biologists at the working level in both countries have enthusiastically agreed upon a number of studies of mutual interest, especially

for species known on both continents, actual progress in getting projects started has been slow. Raisa Scriabine, coordinator of the U.S./USSR program, attributes past delays to communications problems and difficulties in gaining access to institutions and individuals in the Soviet Union.

But recently, she says, trust and rapport on the political level have improved. "We are getting to the point where we can get what we both need." We have a lot to learn from the Soviets, according to Scriabine. "In some areas, they are far ahead of us, protection-wise."

Conservation and environmental protection have been major goals of the government in recent years, and many species in the Soviet Union—such as the Eurasian beaver, which was in danger of extinction in the 1930's—have been restored through captive breeding. Last year, the Soviets enacted a law protecting all wildlife.

This year's agenda calls for a number of exchanges with the Soviets—including visits by scientists—on the protection of migratory birds, the study of raptors and their role in ecosystems, the study of northern ecosystems, plants, and captive breeding of endangered and threatened species.

Siberian White Crane

In the Siberian crane project, which took three years to negotiate, International Crane Foundation scientists originally wanted to do the captive breeding in the Soviet Union. But in consultations with Dr. Vladimir Flint, a Siberian crane expert with the Soviet Ministry of Agriculture's Central Laboratory for Nature Conservation, it was decided that facilities there were not suitable, and that it was more prudent to locate the project here. ICF is associated with the University of Wisconsin at Madison, which has hatching and quarantine facilities. After 30 days, the chicks are brought to ICF at Baraboo, Wisconsin, 45 miles north of Madison for raising and breeding.

Last July, a pilot transfer of four eggs collected by Flint from Siberian crane nests was accomplished via commercial airlines. Two of the four eggs were fertile and both hatched. The birds—a male and a female—are now maturing and will be used in the captive breeding program along with those which survive from this year's scheduled transfer of 12 eggs. The ICF also has two mature Siberian cranes which were acquired earlier.

Dr. George Archibald, head of ICF, says the crane apparently has declined because of destruction of the bird's preferred wintering habitat—shallow wetlands with abundant vegetation. It is now found in the winter only in a small sanctuary near Agra, India, and along the Yangtze River in China.

A foster parent technique will be used in attempting to start a third flock that will winter at a refuge in Iran, where the crane formerly migrated. Once the captive-reared birds are able to mate and commence egg production, their eggs will be transported back to the USSR and placed in the nests of common cranes which winter in Iran. It is hoped the common cranes will rear them in the same way sandhill cranes have been used to hatch and rear Endangered whooping cranes (*Grus americana*) from eggs placed in their nests at (the Service's) Gray's Lake Refuge in Idaho.

One hitch in the plan is that common cranes nest much earlier than Siberian cranes and have already hatched their young by the time their



International Crane Foundation photo

One of the Siberian crane chicks hatched last year at the University of Wisconsin is now nine months old



Photo by Raisa Scriabine

Dalmation pelicans are being raised at the Soviet Union's Astrakhan Preserve on the Volga River, one of 125 such preserves now found throughout USSR

rarer cousins are laying eggs: ICF has found that by artificial photoperiod, they can induce captive Siberian cranes to lay eggs at precisely the same time that wild common cranes nest. These eggs can then be flown to Siberia for the egg switch.

The ICF expects that it will take about 5 to 10 years to build a new flock in the wild. A Soviet film of Flint collecting the Siberian crane eggs last year is to be shown soon in this country on public television.

Botanical Exchange

In the summer of 1976, and again in 1977, American and Soviet botanists exchanged visits, observing the strong floristic relationships which exist between eastern and western North America and Asia Minor and eastern Asia. The Americans toured preserves in the Caucasus mountains and near the Black Sea to see a stand of a rare subspecies of pine (*Pinus brutia pithyusa*) and an endemic boxwood (*Buxus colchida*). A total of 125 such "preserves" have been established throughout the Soviet Union, providing protection for every type of ecosystem.

Top Soviet scientists live in the pre-

serves and every year publish the results of their studies. Some of the preserves are fenced, and no visitors or hunters are allowed in any of them. (Also, the picking of wild flowers in the Moscow area has been banned.)

On their visits to this country, groups of Soviet botanists took field trips through the Adirondack, Appalachian, and Rocky mountains. They observed rare and endangered plant species, collected seeds and specimens, and visited botanical gardens.

This year, both sides have agreed that three U.S. botanists will take 40- to 45-day field trips, in the Altai and Lake Baikal areas, to collect botanical samples. A Soviet delegation will take a similar tour through North and South Dakota, Minnesota, and Wisconsin. In addition, joint botanical research projects with American and Soviet scientists working side by side will be conducted at arboreetums in each country, with the emphasis on rare, threatened, and endangered species. The results of this work are expected to be published jointly.

Migratory Birds

Several studies and exchanges are

in progress relating to migratory birds, including raptors. On Wrangel Island, in the Eastern Siberian Sea, Dr. William Sladen of Johns Hopkins University has been tagging and marking snow geese (*Chen caerulescens*) with Dr. A. A. Kistchinski of Moscow's Institute of Evolutionary Morphology and Animal Ecology of the USSR Academy of Sciences in an effort to determine why their numbers have been declining. The geese migrate between Siberia and southern California.

The research has shown important differences between the migration habits of the Wrangel Island and Canadian snow geese populations and has identified areas where they are hunted and protected, and where additional protection is indicated.

A similar project involving the Endangered arctic peregrine falcon (*Falco peregrinus tundrius*), which occurs in northern Russia as well as Alaska and Canada may get underway this year. Dr. Prescott Ward of the U.S. Army Aberdeen Proving Grounds has been live-trapping and marking arctic peregrines since 1970 at the Assateague Island National Seashore off the coasts of Maryland and Virginia. He is hopeful that two Soviet scientists will be permitted to observe the migratory studies this fall and cooperate in getting a more accurate idea of the raptor's population in the Soviet Union.

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Saudi Arabian Projects

In 1974, the United States and Saudi Arabia established a Joint Commission on Economic Cooperation. Subsequent agreements call for the Department of Interior to provide technical assistance in the form of manpower and information to the Saudi government through a multi-million dollar trust fund established with the U.S. Treasury by the Saudi government expressly for this purpose. All expenses to the U.S. are defrayed by this fund.

Since May 1977, the Service has been periodically active in assisting in the development of a management plan to conserve the houbara bustard (*Chlamydotis undulata*), a turkey-sized game bird that has declined because of overhunting.

Subsequent requests for assistance in recruiting personnel in wildlife biology have been incorporated into an overall goal to promote wildlife conservation policies in the kingdom and to stimulate interest in creating a governmental agency to administer those policies.

International Activities

Musk Oxen and Polecats

As part of a joint management plan under the environmental agreement, the Service in 1975 facilitated the transplant of 40 musk oxen (*Ovibos moschatus*) from Alaska to two locations in Siberia. The musk ox evolved a million years ago on the arctic steppes of north-central Russia, later migrating to what are now Alaska, Canada, and Greenland. They were extirpated in Asia 200 years ago, and 100 years ago in Alaska.

The musk oxen (15 males and 25 females) relocated in the USSR came from a herd of 600 to 700 existing on Nunivak Island National Wildlife Refuge off the Alaskan coast. (This herd, in turn, had grown from a transplant of 31 musk oxen purchased by the U.S. from Greenland in 1936.) Two young musk oxen have been born since the relocation, and the transplant is now considered a success.

The Soviets have supplied the Service's Patuxent Wildlife Research Center with 35 specimens of Siberian polecat (*Mustela eversmanni eversmanni* and *M. e. satunini*) to augment captive propagation studies with Endangered black-footed ferrets (*Mustela nigripes*) which they closely resemble. The polecats have proven of limited usefulness as surrogate breeders, however, because the shipment included only two females.

U.S.-Mexican Cooperation

The Service in 1975 signed an agreement with its counterpart agency in Mexico, the Direccion General de la Fauna Silvestre, to form a Joint Committee on Wildlife Conservation. Several projects are now in progress with support from the National Wildlife Federation, the National Audubon Society, and the Texas and New Mexico Departments of Fish and Game. All the projects involve Endangered or Threatened species.

In addition, the agreement covers such areas of common interest as law enforcement, migratory birds, wildlife research and transplants, training and public information programs, and ecological studies in the Baja California-Sea of Cortez area.

A Committee population study completed on the Mexican wolf (*Canis lupus baileyi*) indicates the subspecies has been extirpated from the U.S. and that probably less than 100 individuals remain in Mexico. The population—mostly scattered individuals and very few family groups—is threatened by poison bait placed by ranchers, a practice the Committee would like to stop.



Photo by Raisa Scriabine

Soviet scientists tag one of the 40 musk oxen involved in the 1975 relocation from Nunivak Island National Wildlife Refuge to Wrangel Island and Taymyr Peninsula in the USSR

Some of the wolves have been live trapped and shipped to the Sonora Desert Museum at Tucson, Arizona, where a captive breeding program may be undertaken.

A search is continuing for the Mexican grizzly bear (*Ursus arctos nelsoni*) but so far without success. The subspecies has been extinct in the U.S. for at least 20 years and is believed to be extinct in Mexico.

A search for a breeding population of the California condor (*Gymnogyps californicus*) in Mexico's northern Baja California also has proved fruitless. The search last August was prompted by several unconfirmed sightings of the bird in recent years along the peninsula. The Committee now believes that no breeding population of condors exists in Mexico.

Border Surveys

U.S. and Mexican biologists are co-operating in studies and aerial surveys of species which exist along the border—the Sonoran pronghorn antelope (*Antilocarpa americana sonorensis*), masked bobwhite quail (*Colinus virginianus ridgwayi*), and Mexican duck (*Anas platyrhynchos diazi*), which is now estimated to number at least 22,000 in the Mexican highlands.

The Joint Committee is seeking more population data on the jaguar (*Panthera onca*) to determine the status of

this cat in Mexico. A public information program has been initiated for Mexican citizens to promote the reporting of sightings of the whooping crane. The U.S. also is working with Mexico on the protection of whales and sea turtles.

Hemispheric Treaty

In addition to working with Mexico, the Service has started up projects with other Latin American nations to promote implementation of the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere. These projects include the following:

- **Brazil**—A bird banding program is in progress to adopt techniques that are compatible with the common system now used by the U.S., Canada, and Mexico. (The bird-banding lab at Patuxent participated in a training program for a Brazilian last summer.) Research also is underway on the Amazonian manatee (*Trichechus inunguis*).

- **Venezuela**—A regional training center is being established for wildlife and park managers by the Service and the NPS.

- **Ecuador**—A proposal by Ecuador for assistance in wildlife management and training is under review by the Service and NPS.

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The Convention was signed by the United States in 1940. But Congress did not authorize its implementation until passage of the Endangered Species Act of 1973. Other nations also had displayed little interest in putting the treaty into effect, until recently. The decline in wildlife resources, however, is now more generally recognized as a hemispheric as well as a global problem—particularly in the realm of protecting migratory birds.

The Convention calls for the establishment of wilderness areas, parks, and reserves with protected boundaries, to conserve migratory species. It also would regulate trade in plant and animal species that have been listed by its party nations.

The Organization of American States has scheduled workshops this year on the protection of natural areas, migratory species, marine mammals, education and training, and environmental education to develop papers discussing needs and issues. The U.S. has offered to host a workshop to address legal issues and the need for concern about the preservation of wildlife resources in the western hemisphere.

These workshops will set the stage for a conference in 1979 of scientists and program managers from OAS nations to establish priorities for implementing the Convention throughout North and South America. (Canada is not a member of the OAS, but has indicated it may accede for the purposes of participating in the Convention.) A general assembly session would be scheduled later.

Migratory ES Convention

The Service also is an active participant in the work of the International Union for Conservation of Nature and Natural Resources (IUCN), headquartered at Morges, Switzerland. Last October, the previous chief of the Service's International Affairs office, Earl B. Baysinger, was selected for a two-year detail to the United Nations Environment Programme. He has been assigned as executive officer of the IUCN's Survival Service Commission, which is responsible for compiling biological data and advising on the status of species nominated for listing in the Appendices to the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Baysinger maintains a close working relationship with the Service on all matters of international significance.

Currently, the IUCN's Environmental Law Centre in Bonn, Germany, is drafting the terms of a new convention which would cover all migratory endangered species and set minimum criteria for their management as a counterpart to the Convention on International Trade. The draft will be reviewed at a meeting in Bonn this summer and a conference of interested party nations is expected to be held next year to set up the Convention.

International Affairs chief Bertrand says, "We think the migratory endangered species management convention is a promising conservation effort—and, if the final draft meets our requirements, the United States will be a prime supporter."

- The ruling will facilitate more effective administration because it will more accurately reflect the biological situation of the species.

- It is best to retain the designated state boundaries for listing.

- Although the populations in Oregon and Minnesota are doing better than those in other states, their total numbers are not sufficiently large to permit them to be excluded from listing.

- There are instances in which logging is known to have been harmful to bald eagles, but it is recognized that not all logging activities are detrimental to the species' wellbeing.

- The Michigan, Minnesota, Oregon, Washington, and Wisconsin populations warrant Threatened rather than Endangered status because they are comparatively large, are breeding relatively well, and they are essentially continuous with much larger populations in neighboring Canada.

- Stringent regulations will be applied to both Endangered and Threatened bald eagle populations.

Consequently, the final ruling on the bald eagle is essentially the same as the original proposal. On a nationwide basis, the breeding range of the species has been considerably reduced in recent years, owing to widespread loss of suitable habitat and the adverse effects of recreation, logging, and other human activities. In particular, illegal shooting continues to be the leading cause of direct mortality in both adult and immature bald eagles.

The Service expects that adding the protective measures of the 1973 act (especially section 7) to the existing statutes (the Bald and Golden Eagles Protection Act and the Migratory Bird Treaty Act) will increase the species' long-term chances of survival.

In issuing the final ruling, the Service also stated that it intends to designate Critical Habitat for the bald eagle as soon as substantial data have been compiled and analyzed. Accordingly, the Service invites organizations and individuals with relevant information to write to the Director, U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

Eagle (continued from page 1)

based on its findings (F.R. 7/12/76).

Comments

The Service received comments on the proposal from about 120 U.S. Senators, U.S. Representatives, Federal agencies, state governments, organizations, corporations, and private citizens. More than 100 of these responses expressed support for the proposed ruling.

Several state governments expressed concern that the eagles could come under different, possibly improper, classifications as they moved from one state or country to another; that the ruling was being made only for administrative purposes; and that eagle populations in particular states (e.g., Oregon and Minnesota) are neither Endangered nor Threatened).

The Federal Timber Purchasers Association questioned the need for any rulemaking. Several logging companies also expressed criticism, includ-

ing the comment that logging should not be cited as a threat to the bald eagle.

The Environmental Defense Fund, as well as two private citizens, stated that the species should be listed as Endangered throughout its entire range. The National Audubon Society, the American Ornithologists' Union, and the Smithsonian Institution, while generally supporting the proposal, recommended extending Endangered status to the bald eagles in Oregon and the southern parts of Michigan, Minnesota, and Wisconsin. The National Wildlife Federation and the Wilderness Society requested Service assurance that Threatened eagles would receive essentially the same protection as Endangered eagles.

Conclusions

After reviewing the comments received, the Service came to the following conclusions:

Reference Note

All Service notices and proposed and final rulemakings are published in the *Federal Register* in full detail. The parenthetical references given in the BULLETIN—e.g., (F.R. 1/17/78)—identify the month, day, and year on which the relevant notice or rulemaking was published in the *Federal Register*.

Rulemaking Actions — February 1978



Photo by Thomas A. Wiewandt

A Mona ground iguana poses on coral outcrop

Mona Island Boa, Iguana Listed

In a final rulemaking, effective March 6, the Service has determined that the Mona boa (*Epicrates monensis monensis*) and the Mona ground iguana (*Cyclura stejnegeri*) are Threatened and that their range—Mona Island—should be designated as Critical Habitat (F.R. 2/3/78).

Unique to Mona Island (part of the Commonwealth of Puerto Rico), the two reptiles are threatened by possible habitat modification and the presence of competitive and predatory feral animals.

Given that the island's fauna also includes three birds already listed as Endangered and that there are still other species that may qualify for listing in the future, this final rulemaking helps provide protection for an entire, unique ecosystem.

Background

As published in the *Federal Register* on May 26, 1977 (see June 1977 BULLETIN), the Service's original proposal recommended Threatened status and Critical Habitat determination for the boa and iguana and also the Mona blind snake (*Typhlops monensis*). The

principal threats to the three reptiles were cited as being adverse habitat modification resulting chiefly from development of a major oil superport on the island, and also predation and competition by wild pigs, goats, and other feral mammals.

Commenting on the proposal, Dr. Fred V. Soltero Harrington, secretary of the Puerto Rico Department of Natural Resources, expressed concern for the status of the three reptiles and emphasized the threat posed by natural predators. He also pointed out that the superport plans had been abandoned and that the Commonwealth intended to develop the island as a natural area.

Conclusions

Following an indepth review of all comments, the Service concluded that, although a superport will not be built, increased tourism and other recreational activities could damage or destroy the boa's and iguana's habitat, particularly nesting areas. In addition, feral mammals continue to pose a threat to the reptiles.

In determining Threatened status

and Critical Habitat for the two reptiles, therefore, the Service emphasized the need for feral mammal control and some controls on recreational use. The Service noted that the Puerto Rico Department of Natural Resources has already begun to station law enforcement personnel on the island and is currently reviewing a comprehensive management plan.

In addition, the Service decided not to list the blind snake, in that the species is no longer threatened by extensive modification of its subsurface habitat by port construction.



Photo by Thomas A. Wiewandt

Mona boa is a rarely sighted species

Review of Convention Species

The Service is requesting help in gathering information on species native to the United States that are now protected by the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

The data—needed by April 15—will be used by the Service's Wildlife Permit Office, as U.S. Management Authority for the Convention, in formulating proposed changes in the species listed in the appendices of the Convention. The proposed changes must be published in the *Federal Register* by May 15. (All party nations must submit their formal proposals for alterations in the listings to the Convention Secretariat by July 31, 1978.)

A list of the species on which information is requested may be obtained from the Wildlife Permit Office, or may be found in the March 6, 1978 issue of the *Federal Register*.

ENDANGERED SPECIES SCIENTIFIC AUTHORITY

Notices—March 1978

The Endangered Species Scientific Authority (ESSA) is responsible for the biological review of applications to export or import species listed in Appendix I, and to export species listed in Appendix II, of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Notices of ESSA's findings and other actions are published in the Federal Register. Summaries of these notices are reported in the BULLETIN by month of publication.

Rulemaking Procedures Set for 1978-79 Exports

A rulemaking procedure that involves public participation will be followed by the Endangered Species Scientific Authority (ESSA) in determinations on export of the 1978-79 harvest of bobcat, lynx, river otter, and American ginseng.

In a notice published in the *Federal Register* on March 16, 1978, ESSA announced the following timetable for the rulemaking (dates are approximate):

April 10—A notice will be published in the *Federal Register* stating the

types of biological, harvest, and other data ESSA will need in order to find in favor of exports of the three animal and one plant species. Copies of the notice will be sent to State fish and wildlife agencies and other interested parties. Thirty days will be provided for comment.

May 1—A hearing will be held by ESSA on the information needed to satisfy ESSA that export will not be detrimental to the survival of the four species.

July 7—ESSA's preliminary findings for the 1978-79 season will be published, with a 30-day comment period.

Sept. 1—ESSA's final findings for the 1978-79 season will be published in the *Federal Register*.

The rulemaking procedure was requested by the International Association of Fish and Wildlife Agencies, the Defenders of Wildlife, and others, under terms of the Administrative Procedure Act.

ESSA is developing more general procedures for use on a permanent basis to allow public participation, and will propose these procedures in the near future.

ESSA Meetings Opened to Public

The Endangered Species Scientific Authority (ESSA) has established procedures providing for public attendance—and, to a limited degree, participation in—ESSA meetings.

Each such meeting will begin with a public comment period, generally lasting no more than 30 minutes. Any individual may make a public comment or statement regarding ESSA matters, provided that a prior appointment has been made with the ESSA executive secretary.

Following the public comment period at a regular ESSA meeting, members of the public may remain as observers, except when the ESSA is in executive session. Observers do not need to make appointments, except to guarantee themselves seating.

The ESSA expects that meetings open to the public will be held on the first Tuesday of each month. However, this is subject to change without public notice. To obtain further information on the new procedures, as well as specific meeting dates, times, and places, and to make appointments to speak at public comment periods, contact the Office of the Executive Secretary, ESSA, 18th and C Streets, N.W., Washington, D.C. 20240 (telephone: 202-343-5687).

Louisiana Contests ESSA's Controls On Bobcat, Otter

The State of Louisiana is seeking an injunction and declaratory judgment against the Endangered Species Scientific Authority (ESSA), claiming the agency's regulation of bobcat and river otter exports is an "arbitrary and unlawful" restriction of legitimate commerce.

The civil case (docket no. 78-423) filed February 8 in the United States District Court for Eastern Louisiana is the first test of ESSA actions taken under provisions of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

In their brief, attorneys for the State allege that the bobcat and river otter were listed illegally on Appendix II of the Convention because of a lack of supporting evidence that actual or potential trade constituted a threat to the survival of the species, and because an environmental impact statement was not proposed for the listing. In addition, they allege that ESSA did not give

adequate opportunity for public participation in its findings, and that ESSA unlawfully restricted export without evidence of detriment to these two furbearers from Louisiana.

The request for an injunction is directed at ESSA's finding last year resulting in prohibition of export of bobcat and otter pelts taken after November 30, 1977, and ESSA's subsequent decision to establish harvest quotas for the two species in each State where they occur, including quotas of 4,000 bobcats and 7,500 otters for Louisiana. These actions are illegal, the State maintains, because "the parties to the Convention listed such species on Appendix II for the purpose of monitoring their occurrence in trade and not for the purpose of restricting trade until such time as information obtained during such monitoring suggests to the parties a need for restriction."

The brief says the State's "minimum conservative" estimate of the resident

bobcat population is 33,000 and 30,000 for the river otter. Both species are subject to State licensing regulations covering a 90-day annual trapping season. In recent years, the bobcat harvest has increased, but the State maintains that the species is "still underharvested" in Louisiana because many areas of wooded habitat are inaccessible and never trapped. River otter populations in Louisiana were described as at their "highest level in the last 30 years."

Louisiana's Department of Wildlife and Fisheries initiated the suit. Two trappers and two fur dealers from Louisiana were also listed as plaintiffs. The Management Authority, members of ESSA, and William Y. Brown, executive secretary of ESSA, were named as principal defendants. Brown said that an answer to the complaint was in preparation.

Pending Rulemakings

The Service expects to issue rulemakings and notices of review on the subjects listed below during the next 90 days. The status or action being considered for each final and proposed rulemaking is given in parentheses.

The decision on each final rulemaking will depend upon completion of the analysis of comments received and/or new data made available, with the understanding that such analysis may result in modification of the content or timing of the original proposal, or the rendering of a negative decision.

Pending Final Rulemakings

- 6 butterflies (C.H.)
- Contra Costa wallflower and Antioch Dunes evening primrose (C.H.)
- 13 plants (E, T)
- Grizzly bear (C.H.)
- 15 crustaceans (E, T)
- Whooping crane (C.H.)
- Black toad (T, C.H.)
- New Mexican ridge-nosed rattlesnake (T, C.H.)
- 2 zebras (E)
- Socorro isopod (E)
- Little Kern golden trout (T, C.H.)
- (Greenback cutthroat trout (reclassification to T)
- 7 Eastern land snails (E, T)
- 12 Western snails (T)

Pending Proposed Rulemakings

- 10 North American beetles (E, T)
- 2 harvestmen (E, T)
- 3 mussels (C.H.)
- Rocky Mountain peregrine falcon population (C.H.)
- Colorado squawfish (C.H.)
- Virgin River chub (E, C.H.)
- 2 Hawaiian cave invertebrates (E, T)
- Leatherback sea turtle (C.H.)

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	36	227	263	2	17	19
Birds	68	144	212	3		3
Reptiles	10	46	56	6		6
Amphibians	5	9	14	2		2
Fishes	30	10	40	10		10
Snails		1	1			
Clams	23	2	25			
Crustaceans						
Insects	6		6	2		2
Plants	4		4			
Total	182	439	621	25	17	42

Number of species currently proposed: 108 animals
1,867 plants (approx.)

Number of Critical Habitats proposed: 39

Number of Critical Habitats listed: 26

Number of Recovery Teams appointed: 59

Number of Recovery Plans approved: 15

Number of Cooperative Agreements signed with States: 21

February 28, 1978

- Puerto Rican whip-poor-will (C.H.)
- Laysan duck (C.H.)
- Bonytail chub (E)
- Razorback sucker (T)
- West African manatee (T)
- 20 Appendix I spp.
- Cui-ui (C.H.)
- Whooping crane (C.H.—additional areas)
- Illinois mud turtle (E, C.H.)
- Key mud turtle (E, C.H.)
- Plymouth red-bellied turtle (E, C.H.)
- 5 Ash Meadow plants (C.H.)
- 7 California and Oregon freshwater fishes (E, T)

- 23 foreign mammals and 1 bird (E)
- Light-footed clapper rail and yellow-shouldered blackbird (C.H.)
- Santa Cruz long-toed salamander (C.H.)
- Hawksbill sea turtle (C.H.)
- 2 Virginia fishes (T, C.H.)
- Maryland darter (C.H.)
- 4 Texas/New Mexico fishes (E, T, C.H.)

Pending Notice of Review

- Rhesus monkey in Bangladesh

Abbreviations: E=Endangered, T=Threatened,
C.H.=Critical Habitat



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

Status Review Shows Mexican Duck Should Be Deregulated

A Service review of the Mexican duck's status has revealed information indicating the species is no longer Endangered or Threatened. Accordingly, the Service has proposed that *Anas diazi* be removed from the U.S. List of Endangered and Threatened Wildlife and Plants (F.R. 3/31/78).

The species' status has been complicated by hybridization with the mallard (*Anas platyrhynchos*) since the Mexican duck was first listed as an Endangered species under the Endangered Species Preservation Act of 1966. At that time available data suggested that interbreeding with the mallard and drainage of wetlands habitat, particularly along the Rio Grande in New Mexico and in northern Mexico, was threatening the Mexican duck's existence. It was surmised that the species was in similar stress throughout its range, which extends to southern Mexico.

(continued on page 11)

Minnesota's Gray Wolf Population Reclassified to Threatened Status

Minnesota's wolf population has been reclassified from Endangered to Threatened and northern areas of the State, together with Isle Royale National Park, Michigan, have been designated as Critical Habitat for the species in a final rulemaking issued by the Service (F.R. 3/9/78).

All other wolves in the conterminous United States and in Mexico remain listed as Endangered.

The ruling, effective April 10, also simplifies and updates the listing system used under the Endangered Species Act of 1973. Subspecific names have been deleted and all gray wolves are listed as *Canis lupus*.

In addition, the ruling is accompanied by special regulations authorizing the taking of wolves that prey on legally present domestic animals in certain areas of Minnesota.

Anticipated Effects

The Service considers the ruling "to accurately express the current status

of the gray wolf, based solely on the best available biological data." On a broad scale, the ruling is expected to provide all wolf populations south of Alaska and Canada (where wolves are plentiful) with full protection under the 1973 act, and to simplify law enforcement and conservation measures.

Specifically, in dealing with Minnesota's estimated 1,200 wolves (the only significant wolf population south of Canada), the Service anticipates that the ruling will help reduce the present conflict between wolf and human interests and will thereby provide for the wolf's future well-being.

Comments on Proposal

The Service received many comments in response to the original proposal, published in the *Federal Register* on June 9, 1977 (see July 1977 BULLETIN). Respondents included numerous federal, state, and local agencies and officials, private organizations, and over 1,700 private citizens.

At the federal level, the National Park Service and the U.S. Forest Service voiced general support for the proposal. At the state level, 25 of the 26 state governors who responded either supported the proposal or expressed no opposition.

The Governor of Minnesota recommended that the wolf not be listed as either Endangered or Threatened in Minnesota, but that, if it was listed, certain adjustments should be made in the proposed Critical Habitat boundaries and in the depredation-control regulations. In addition, the Secretary of State of Minnesota sent the Service a copy of a state legislature resolution, approved by the Governor, calling for the complete declassification of the wolf in Minnesota. Similar views were voiced by various State and local officials and governmental units.

(continued on page 11)



U.S. Fish and Wildlife Service photo by Don Rimbach

A federally supported study is helping promote the survival of the Indiana bat in Missouri, one of the most important locations of this Endangered species. For details see the special state report on Missouri's endangered species program starting on page 4.

Regional Briefs

The following summary of activities has been reported by the Endangered Species Program regional staffs:

Region 1. The Sierra Club has initiated a civil suit in hopes of forcing the State of Hawaii to eradicate feral sheep and goats from the mamane-naio forest habitat of the Endangered palila (*Psittirostra bailleui*). Elimination of the sheep and goats on lands owned by the State, which include the bird's last remaining habitat on the island of Hawaii, was recommended in a recently approved recovery plan for the palila (see February 1978 BULLETIN).

Region 2. In a section 7 consultation, the Service has pointed out some possible dangers to the Endangered humpback chub (*Gila cypha*) in a proposed National Park Service (NPS) plan that would alter the water temperature of the Colorado River in the Grand Canyon. The NPS has suggested that the Bureau of Reclamation place multiple penstocks in the Glen Canyon Dam reservoir to release warmer waters from its upper portion, raising the temperature of the nearly freezing water being released from the bottom

of the dam. If the water temperature is raised, the Service said it could invite the entry of such exotic species as the striped bass (*Morone saxatilis*) and an external copepod parasite (*Learnea* sp.), which cannot survive in cold water, to the detriment of the humpback chub. The Service has recommended that the NPS conduct studies to determine the benefits and problems with the proposed project, which is intended to enhance trout habitat in the river.

Potential negative biological effects on Endangered brown pelicans (*Pelecanus occidentalis*) and whooping cranes (*Grus americana*) at Aransas National Wildlife Refuge have been noted by the Service in a section 7 consultation with the National Marine Fisheries Service (NMFS) on a proposed deepwater oil terminal, called Sea Dock, off the Texas coast. The Service recommended the development of contingency plans to prevent possible oil spills from reaching the refuge and cleanup procedures, should they occur.

Region 3. An endangered species publications unit has been formed by the staff in cooperation with the Service's Twin Cities Public Affairs Office.

Materials published by the States in the region, other Service regional offices, and the Service's Washington Office of Public Affairs have been assembled by the unit to respond to public inquiries on Endangered and Threatened species.

Region 4. Studies were conducted by the Service in April on the possible effects of commercial aircraft operations on the Florida everglade kite (*Rosthamus sociabilis plumbeus*) in connection with the location of the Florida Replacement Jetport, a new training facility, in Dade County. A further study is planned in April or May at Barranquilla, Colombia, of the effect of jet operations on the snail kite. The Federal Aviation Administration, which requested the section 7 consultation, is participating in the studies. A biological opinion is expected to be issued by the Service in June.

Region 5. Two of the four breeding pairs of bald eagles (*Haliaeetus leucocephalus*) at the Service's Patuxent Wildlife Research Center have produced second egg clutches this year. The captive propagated eggs and/or the eaglets hatched from them will be used for additional transplants. Last year, two eaglets from Patuxent were released in the Montezuma National Wildlife Refuge in New York State and one eaglet was hatched from a total of three eggs placed in the nests of unproductive eagles in northern Virginia.

Region 6. A biological opinion has been prepared by the Service for the Bureau of Land Management in connection with a section 7 consultation on the Allen-Warner Valley Energy System in southwestern Utah. The opinion says the Harry-Allen Power Plant, a coal processing facility, should be carefully monitored for possible detrimental effects upon the moapa dace (*Moapa coriacea*), the woundfin (*Plagopterus argentissimus*), the bald eagle, and the peregrine falcon (*Falco peregrinus*) through emissions of mercury and arsenic. The same opinion noted that if the Warner Valley Water Project is carried out as planned, it would reduce the flow of the Virgin River and possibly jeopardize the woundfin. Minimum water levels essential to the species were specified in the opinion.

Alaska Area Office. One-day workshops have been held in Fairbanks and Anchorage to assist area Service personnel in gearing up for section 7 consultations. The Endangered Species Program staff also has been holding discussions on proposed listings of endangered and threatened plants in Alaska with Bureau of Land Management personnel and also with University of Alaska botanists.

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Colorado Squawfish Restoration Plan Approved By Service



U.S. Fish and Wildlife Service photo by Donald P. Toney

Captive Colorado River squawfish will play role in restocking program

A recovery plan calling for a major effort to restore the Endangered Colorado squawfish (*Ptychocheilus lucius*)—also known as the “white salmon”—in its present and portions of its former range in the Colorado River basin has been approved by the Service.

The plan’s primary goal is to maintain self-sustaining populations of the fish in its native ecosystem where the species may be restored to the point where it can be reclassified to Threatened status, or delisted entirely.

The Colorado squawfish belongs to the minnow family, Cyprinidae, and is considered the largest minnow in North America. A maximum weight of more than 80 pounds and length of nearly six feet have been recorded. However, the recovery team said that specimens over 15 pounds have been rare in the past decade. Their huge pike-like bodies, upstream migratory habits, delicate flesh (the squawfish is a predator on other fish), and fighting behavior when hooked on a lure are the characteristics responsible for the “white salmon” sobriquet.

Unique Adaptation

Once plentiful in the Colorado River and its tributaries, the squawfish is now believed to be extinct in the lower basin and to have declined drastically in the upper basin because of main-stream dams that have imposed radical changes on the rivers.

Before these changes took place, the Colorado was a savage river, drop-

ping more than two miles on its 1,700-mile course to the Gulf of California, and creating some of the most raging water found anywhere. The water itself was laden with mineral salts and choked with silt, giving it an unchanging color and its name—*Rio Colorado*, the great Red River of the West. The recovery team notes:

“Indeed, at one time the Colorado river was a harsh environment for any living thing, and the fish that evolved in its muddy, turbulent waters are unique. Some formed strangely modified backs i.e., humpback chub (*Gila sypha*) and razorback sucker (*Xyrauchen texanus*); while others developed thin caudal peduncles, tiny scales and large falcate fins, i.e. bonytail chub (*Gila elegans*); unique adaptations to a demanding environment. And sitting on top of the trophic pyramid, the top carnivore of the Colorado system, was the squawfish . . . [which] preyed at will on those other fishes, themselves so uniquely adapted to the Colorado river.”

Starting with the Hoover Dam in 1935, more than 20 other dams have been built in the Colorado River system. “Over much of its course, [the Colorado] has become a series of mill ponds, connected by clear, cold trout streams,” the recovery team said, adding: “Is it any wonder that those species, adapted to the *Rio Colorado*, find themselves strangely out of place in this newly created man-made environment?”

Recovery Plan Steps

Investigators have had difficulty in determining the present distribution of the squawfish because of the isolated nature and high turbidity of the rivers they are known to inhabit. The recovery team cited studies indicating the species is present in Grand, Desolation, and Yampa canyons. The Yampa River, still largely in its natural state, appears to contain small numbers of not only the squawfish but the Endangered humpback chub, the rare bonytailed chub, and the razorback sucker.

In the recovery plan, the team recommends an extensive monitoring program to identify the squawfish’s existing habitat and additional studies to delineate the biological characteristics of its habitat. This information would be used to define Critical Habitat and to protect and improve habitats where feasible. In addition the plan sets forth a restocking program, and outlines steps for reintroduction of the fish in portions of its historic habitat through artificial propagation and stocking. Other elements of the plan include:

- Enforcement of laws to protect the fish’s present habitat from damage by industry and to protect the fish from being taken illegally.
- An extensive information and education program to make the public aware of the fish’s plight.
- Performance of basic studies on the fish’s life history, spawning requirements, food habits, population dynamics, and biological history.

Missouri's 'Design For Conservation' Plan Is Broadening ES Protection; More Habitat Being Acquired

MISSOURI
DEPARTMENT
OF CONSERVATION

Moles Cave, one of the largest known nursery sites for the Endangered gray bat, has just been purchased by the Missouri Department of Conservation. The \$37,800 purchase—financed entirely by the State—was made possible by a recent amendment to the State constitution in which Missourians voted additional tax revenue to bolster wildlife conservation.

Located on a 108-acre tract in Camden County, Moles Cave served as a maternity site for an estimated 40,000 female gray bats (*Myotis grisecens*) last summer. The area is among more than 20,000 acres of valuable wildlife habitat that have been acquired under Missouri's novel "Design for Conservation" program since July 1977, when the special one-eighth of one percent sales tax went into effect.

"Missourians did something unique at the polls and we want to plan very carefully for the future of their money," says Carl Noren, director of the Department of Conservation. As part of the planning process, the department conducted a series of public meetings to help set priorities for spending the anticipated \$21 million to be provided in the first full year of the tax. "Design" will focus on three major areas: conservation lands, public services, and management and research.

Acquisition has been given highest priority by the State, with 80 percent of the revenue already earmarked for land purchase. Conceived in 1970, the plan aims to improve the State's conservation program by making more public lands available to recreationists and sportsmen, improving wildlife management, and providing additional protection to Endangered species.

Genesis of ES Program

The Missouri General Assembly in 1972 enacted a law directing the Department of Conservation to establish a list of animal and plant species considered to be endangered in the State, and provided statutory protection for them. Since then, the State has placed 138 animal species on its list (including federally listed species), and has designated a total of 365 plants as rare or endangered.

In 1976, Missouri signed a cooperative agreement with the Fish and Wildlife Service and became eligible to receive Federal grant-in-aid matching funds for endangered species conservation in the State.

Missouri's Endangered Species Program is administered through the Department's Natural History Section, the coordinating unit for nongame activities. The mission for this new section provides for the study, protection, interpretation, and enjoyment of native plants, animals, and their associated ecosystems.

The section is headed by John E. Wylie, natural history officer. The scientific staff includes the Endangered Species Program coordinator, a herpetologist, an ornithologist, an urban biologist, a naturalist program coordinator, and a natural areas coordinator.

According to Jim Henry Wilson, coordinator of the Endangered Species Program, "The Department of Conservation and the people of our State have historically attached great importance to endangered species. Many of our people have been quite active in endangered species protection, often



Missouri Department of Conservation photo

Wood Frog

The Missouri Department of Conservation has listed the wood frog (*Rana sylvatica*) as endangered because of its extreme rarity in the State. It is known from only a few localities and in low numbers. The frog is small to medium sized (adults

measure up to 2½ inches or 63 mm) and is tan or brown in color, with a distinct dark-brown "mask" behind the eyes. A solitary and rather secretive creature, the frog is found usually near woodland ponds, springs, and streams.



Indiana bat habitat in Missouri's Mud Cave is studied by Richard and Margaret LaVal, along with John Brady of the U.S. Army

Photo by U.S. Army Corps of Engineers—St. Louis District Corps of Engineers and two coworkers. An infrared remote sensing thermometer is being used to record temperatures.

making time to become involved. Note that our State endangered species statute predates the national act.

"The Endangered Species Program is also an integral part of the 'Design' referendum and subsequent legislation. With this additional funding, we should be able to better coordinate our efforts on behalf of Missouri's endangered species. We are already taking a more active role in research and habitat acquisition."

In its land acquisition program, the National History Section has assigned top priority to Critical Habitats for federally listed Endangered species, with special attention also being given to purchasing habitat for State-listed species. The agency is purchasing some sites as natural areas, representing ecosystems not now in the State system, which will be completely protected. Urban Wild Areas—small tracts in or near cities or towns which provide nucleus habitat for urban birds and wildlife—are also being acquired. In addition, the section plans to establish ecological preserves to protect areas containing rookeries, denning sites, marshes, etc. with scientific or human interest values.

Grant-in-aid funds have been allocated by the Service to assist the federally Endangered Indiana bat (*Myotis sodalis*), the lake sturgeon (*Acipenser fulvescens*) and pallid sturgeon (*Scaphirhynchus albus*), which are both listed as endangered by the State, and for studies of the bobcat (*Lynx rufus*), which is under status review by the Service.

Indiana Bat Project

Recently, Missouri has emerged as one of the most important locations for the Indiana bat, with apparently one

of the more stable populations located in about six primary cave hibernacula. A 1975 census showed Missouri had an Indiana bat population estimated at 280,500.

Last year, Missouri launched a federally supported three-year study of the bat to collect information on its winter and summer distribution and abundance, to determine factors affecting its survival, and to eventually recommend programs to promote its continued survival in the State. An estimated \$137,000 in Federal matching funds has been allocated for the first two years of study, with the State scheduled to contribute about \$68,000 through fiscal year 1978.

Some of the funds will go toward the purchase of a cave and 272 acres of wooded land in Washington County, the hibernating site for an estimated 100,000 Indiana bats. The State plans to maintain the area, which has been designated by the Service as Critical Habitat for the bat, in its natural wild state. A gate will soon be placed across the mouth of the cave to allow the passage of bats and other small animals, and to act as a barrier to human intrusion, which could be disastrous to hibernating bats.

Habitat studies are being conducted by a husband-wife team of consultant scientists, Richard and Margaret LaVal. They are trapping and banding Indiana bats in their winter and summer locations, including the six winter hibernacula, to determine the bats' seasonal behavior and migration patterns. The bats' foraging habits are also being studied in hopes that mortality factors may be determined.

Sturgeon Studies

Lake sturgeon once were so plenti-

ful in the Missouri and Mississippi rivers they were fished commercially. State records show a harvest of 50,000 pounds in 1894. But the catch began plummeting five years later and by 1922 was down to only 4,200 pounds. Biologists attribute the decline to overfishing, but they point out that such manmade changes in the riverine habitat as the emplacement of locks and dams in the early 1900's, and subsequent channelization, may have eliminated or isolated the sturgeon's rearing and spawning areas.

The pallid sturgeon was not recognized as a subspecies until 1905, and scientists believe it probably never was abundant. The fish prefers a strong current over a firm, sandy bottom and, in years of high water, has been sighted in major tributary streams, such as the Kansas River. The last authenticated capture of a pallid sturgeon in Missouri was in 1948. It was taken by a fisherman from the Missouri River at Easley.

Several sites along the Mississippi and Missouri rivers are being checked in the studies now under way to determine the distribution of the two subspecies. At the same time, data are being gathered on the shovelnose sturgeon (*S. platyrhynchus*), a subspecies which is still being harvested commercially but has drastically declined in numbers and range. The annual catch of the shovelnose is now reported at about 4,000 pounds, compared with 150,530 pounds in 1899 (which may have included some pallid sturgeon).

Missouri officials expect the one-year study, to be completed this fall (with \$40,000 in Federal matching fund assistance), to yield data helpful in defining the status of the three

(continued on next page)

subspecies. The findings on shovel-nose sturgeon populations may also be used as a guide to protect certain key habitat areas, to implement protective harvest measures, if needed, and to determine additional research needs.

Bobcat Study

The federally supported bobcat study has been prompted by indications that the Missouri population of the furbearer may be in jeopardy from overharvesting and a reduction in available habitat. The State has closed the 1977 and 1978 bobcat trapping seasons, because of a 12-fold increase in the number of bobcats harvested in the State since 1970—a result of soaring pelt prices. (In 1970, pelts brought an average of \$4 apiece and only 91 animals were reported taken; in 1976, when the average price had risen to \$46.50, the harvest jumped to 1,107 pelts.) In addition, only a small fraction of the once-plentiful Ozark hardwood forests remain, limiting the amount of available habitat for the species.

The one-year study, which will begin in June at a cost of \$8,960 (State and Federal funds) is intended to provide a clearer picture of the bobcat's range and relative abundance. It will be used in determining whether the State will allow harvesting to resume.

Niangua Darter

Under contract with the Service, Missouri recently completed a three-year study of the *Niangua darter* (*Etheostoma nianguae*), a fish listed as rare in the State.

Eight populations of the subspecies were found occupying 128 miles of streams in the Ozark Uplands, which form the Osage River Basin. Through seining and direct observation, the darter's population was estimated at between 2,300 and 27,000 individuals, leading scientists to conclude that the fish is "rare, localized in occurrence, and vulnerable to extinction."

The State has submitted its study data to the Service, and proposed that the darter be federally listed for protection under the Endangered Species Act of 1973.

Mussel Survey

Currently, the Department of Conservation is negotiating with the U.S. Army Corps of Engineers to conduct a study of mussel species in the Missouri part of the Meramec River Basin. The survey will concentrate on the status of federally listed mussels known to exist in the area (*Lampsilis higginsii*, *Cumberlandia monodonta*, *Cyprogenia aberti*, and *Leptodea leptodon*). Data also will be collected on all other mussel species found during the survey.



Photo by W. Pflieger

Niangua darter has been nominated for Threatened status by Missouri

Other State Studies

The department has several other studies in progress or in the planning stage to learn the status of resident species. These include the blind cave crayfish (*Cambarus setosus* and *C. hubrichtii*), which are endemic to the Ozarks; the Illinois mud turtle (*Kinosternon flavescens spoonerii*), which was last reported from Missouri in 1956; and the canebrake rattlesnake (*Crotalus horridus atricaudatus*), which is already on the State's endangered list and appears to be declining.

Endangered Plants

The Missouri Botanical Garden has been awarded a contract by the State's

Department of Conservation to conduct a study of rare and endangered plants of Missouri. Eight herbariums are included in the study: The Missouri Botanical Garden in St. Louis; the Field Museum, Chicago; New York Botanical Garden, Bronx, N.Y.; Gray Herbarium, Cambridge, Mass.; Smithsonian Institution, Washington, D.C.; herbariums of the University of Missouri at Columbia and Kansas City, and Southwest Missouri State University, Springfield.

It is estimated that as many as 2,500 collections of the species under study are in these herbariums. Each collection will be photographed and taxonomically cataloged, and the species will also be listed by the counties where they are found.

Washington University, St. Louis, currently is negotiating with the Department of Conservation to embark upon a two-year study of American ginseng (*Panax quinquefolium*) in Missouri, where the 1977 harvest of wild ginseng was reported at 6,100 pounds. Very little is known about the status of the plant in the State, and the study will attempt to produce an accurate estimate of the distribution and abundance of the species. Recommended management practices also will be developed for harvesting and conserving the species on private and State lands. The status of wild ginseng is now under review by the Service.

Missouri's list of protected plants and animals has been extensively revised. It now includes a county index and, in many cases, annotations on range and natural history. The booklet, "Rare and Endangered Species of Missouri," is available from the Missouri Department of Conservation, P.O. Box 180, Jefferson City, Missouri 65101.



Photo by Tom R. Johnson

Missouri's population of the canebrake rattlesnake is confined chiefly to Mingo National Wildlife Refuge in the southeastern corner of the State; elsewhere in the State the species is declining or extirpated.

ENDANGERED SPECIES SCIENTIFIC AUTHORITY

Notices—April 1978

The Endangered Species Scientific Authority (ESSA) is responsible for the biological review of applications to import or export species listed in Appendix I, and to export species listed in Appendix II, of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Notices of the ESSA's findings are published in the Federal Register. Summaries of these notices are reported in the BULLETIN by month of publication

Export Quotas Set for Bobcat, River Otter, Lynx, Ginseng

ESSA has issued its findings for the 1977-78 season for the commercial international export of four species listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (F.R. 3/16/78).

The four species are the bobcat (*Lynx rufus*, excluding the Mexican bobcat, *L. r. escuinapae*), river otter (*Lutra canadensis*), lynx (*Lynx canadensis*), and American ginseng (*Panax quinquefolius*), all of which are also being considered currently by the Service for possible listing as either Endangered or Threatened under the Endangered Species Act of 1973.

Given the ESSA's mandate to determine whether or not export will be detrimental to the survival of Appendix II species, the findings reflect the best available data and are organized on a state-by-state basis. Biological, commercial, and legal classification of the four species varies among the states.

ESSA's findings were based on an evaluation of new data on populations and harvests received following publication of ESSA's preliminary findings in the August 30, 1977, *Federal Register* (see September 1977 BULLETIN). (A full discussion of the usefulness of various census techniques and total population estimates, as well as the consideration given to long-term harvest and habitat trends and State management practices, is provided in the *Federal Register* notice.)

Bobcat and River Otter

Findings for the bobcat and river otter are summarized in the accompanying table (continued on next page)

BOBCAT, RIVER OTTER: SUMMARY

State	Bobcat			River Otter		
	State Population	State Harvest 1976-77	State Quota 1977-78	State Population	State Harvest 1976-77	State Quota 1977-78
Ala.	60,000-110,000	3,951	4,000	(increasing)	1,072	1,500
Alaska	(not present in State)			(abundant)	2,700	(open)
Ariz. ¹	45,000	7,344	8,000	(State protected)		
Ark. ^{2 10}	37,000	2,733	3,000	6,900	363	400
Calif. ²	(unestimated)	11,903-13,703	6,000	(State protected)		
Colo. ²	41,850	3,044	4,000	(State protected but not present)		
Conn.	(State protected)			(increasing)	61	100
Del.	(not present in State)			(stable)	56	60
Fla.	(unestimated)	13,439	3,500	(abundant)	11,532	6,000
Ga. ³	49,210	2,577	4,000	(increasing)	3,187	4,000
Hawaii	(not present in State)			(not present in State)		
Idaho ^{2 4}	9,000	964	1,475	(State protected; viable population)		
Ill.	(State protected)			(State protected)		
Ind.	(State protected)			(State protected but not present)		
Iowa	(State protected)			(rare) (unknown)		0
Kans.	10,000-12,000	1,650	(none set)	(State protected)		
Ky.	(State protected)			(State protected but not present)		
La. ⁴	33,459	2,997	4,000	30,000-60,000	11,900	7,500
Maine	2,543	436	500	5,258	898	600
Md.	(State protected; very rare)			(stable)	181	165
Mass.	800-1,000	14	50	(stable)	110	68
Mich. ²	(unestimated)	341	(none set)	(increasing)	910	551
Minn. ^{4 12}	(unestimated)	175	150	2,150	2,664	700
Miss.	(increasing)	(1975) 4,374	4,000	(increasing)	(1976) 324	350
Mo.	(State protected)			(State protected)		
Mont.	(unestimated)	1,068	1,070	(stable)	48	36
Nebr.	(stable)	758	400	(State protected but not present)		
Nev.	8,899-17,798	1,345	2,225	500		0
N.H. ⁵	(State protected)			(increasing)	205	200
N.J.	(State protected)			(State protected)		
N. Mex.	13,107-49,135	5,207	6,000	(State protected)		
N.Y. ^{2 4 13}	966-1,933	161	225	1,468+	633	700
N.C. ⁴	8,000	1,101	800	(stable)	1,390	1,200
N. Dak.	(unestimated)	75	165	(not present in State)		
Ohio	(State protected)			(State protected)		
Okla. ¹¹	(unestimated)	3,548	0	(State protected)		
Oreg. ²	(unestimated)	4,002	3,000	(doing well)	435	335
Pa.	(State protected)			(State protected)		
R.I. ⁴	(State protected; uncommon)			(very viable)	34	15
S.C. ^{2 11}	(stable)	1,368	0	(unestimated)	1,351	650
S. Dak. ²	2,500-4,000	418	500	(State protected; presence uncertain)		
Tenn.	7,000-12,000	1,428	1,000	(State protected)		
Tex. ^{7 11}	115,000-278,000	16,049	10,000	2,183	145	0
Utah ⁴	7,872	(State protected)		(State protected)		
Vt.	(unestimated)	84	200	(increasing)	45	50
Va.	12,000	1,440	1,500	(increasing)	776	585
Wash. ⁴	(unestimated)	6,050	6,000	(increasing)	1,290	770
W. Va. ²	4,400	443	500	(State protected but not present)		
Wis.	1,500-2,000	223	300	(stable)	853	1,200
Wyo.	7,000-10,000	(1975) 4,737	2,000	(State protected)	(1975)	
Navajo Nation ⁹	(unestimated)	113	500	(not present)		

¹ Indian reservations in Arizona not subject to State regulations.

² Bobcat habitat: Much closed or inaccessible land in State.

³ High unreported harvest of both bobcat and river otter in Georgia.

⁴ River otter habitat: Much closed or inaccessible land in State.

⁵ Two-year moratorium on bobcat in New Hampshire; opening possible for 1979.

⁶ River otter season closed in Rhode Island, 1970-75.

⁷ River otter season closed in Texas, 1927-50.

⁸ Bobcat season in Utah closed 1977-80 by Agriculture Damage Control Board.

⁹ Navajo Nation not under jurisdiction of 3 States containing reservation.

¹⁰ Quotas set since *Federal Register* publication.

¹¹ States requested "zero" quota, where noted.

¹² Minnesota otter population estimate in *Federal Register* was incomplete, represents minimum breeding population.

¹³ New York otter estimate does not include untagged part of population.

nying table, which shows population, harvest, and ESSA-set export quota by state for each species (full details and comments are given in the *Federal Register* notice).

Lynx

Only five states have an open season for lynx, and 1977-78 export quotas have been set for each of these states as follows:

- **Alaska:** Trapping highly localized and trapping pressure decreasing on statewide basis. Quota: Open.

- **Idaho:** Breeding population mostly in inaccessible areas north of Salmon River. One-month season; only small numbers taken. Quota: 25.

- **Minnesota:** Small breeding population in north, with influx from Canada in peak years accompanied by increased take. Two-month season and bag limit of five. Quota: 25.

- **Montana:** Population increasing, with major breeding population in inaccessible northern areas. Three-month season and bag limit of two. Quota: 200.

- **Washington:** Population mostly in park or wilderness areas; little trapping pressure. Quota: 35.

The following states officially protect the lynx, although not all of them have resident populations: Colorado,

Connecticut, Maine, Michigan, New Hampshire, Utah, Vermont, Wisconsin, and Wyoming.

Because the lynx undergoes great population changes every ten years or so, and because the five open-season states experience an influx of lynx from Canada in high-population years, no attempt has been made to determine population numbers on a state-by-state basis.

ESSA Schedules Public Hearing

An informal hearing will be conducted by the Endangered Species Scientific Authority (ESSA) concerning information required by the agency for its export findings on the 1978-79 harvest of bobcat, lynx, and river otter, and the 1978 harvest of the American ginseng plant.

The hearing is scheduled for 9:30 am, May 1, at the Main Auditorium, Main Interior Building, 18th and D Streets, Washington, D.C. Persons wishing to make statements relevant to ESSA's findings on the four species should contact the Office of the Executive Secretary, ESSA, for an appointment to speak at the hearing.

American Ginseng

The ESSA has left its original finding (F.R. 8/30/77) unchanged; that is, it will allow export only of ginseng roots that have been collected in Michigan, that being the only state that maintains a regulatory program to prevent exploitation. Furthermore, the ESSA states that it will allow such export only for ginseng collected during the 1977 season, and that a notice is currently in preparation for the 1978 collecting season.

ES Violators Convicted In New Mexico and Kentucky

Investigations by the Service's Division of Law Enforcement have led to convictions in two cases involving Endangered species.

On February 27, Thurman Wit of Albuquerque, New Mexico, was sentenced on two counts of having violated the Endangered Species Act of 1973 by attempting to shoot two whooping cranes north of the Bosque del Apache National Wildlife Refuge.

Apprehended by Division special agents in November and convicted in January, Wit was sentenced on the first count to six months in jail, of which he must serve 30 days, plus three years of supervised probation. On the second count, he was given three years of supervised probation (to run concurrently with the count one probation). In addition, he was forbidden to hunt or even carry firearms for three years.

Also on February 27, Ronnie Dale Nanney of Hardin, Kentucky, was sentenced on one count of having violated the Bald Eagle Protection Act by shooting an immature bald eagle. In passing sentence, Judge Edward J. Johnstone emphasized the seriousness of Nanney's offense and the importance of protecting the Nation's wildlife.

Accordingly, Nanney was sentenced to one year in jail (suspended); active probation for three years, during which time he will not be permitted to hunt and will have to work on a conservation project for 80 days; forfeiture of his rifle; and a fine of \$2,500, which is believed to be the most severe fine ever imposed in a bald eagle shooting case.

The Service believes that the investigative success of the Division of Law Enforcement and the responsiveness of the Federal court system (Nanney was sentenced only two months after the shooting) will help provide a deterrent to would-be violators of Federal fish and wildlife laws and regulations. (See law enforcement story in December 1977 BULLETIN.)



An otter at Wishkah River, Washington

U.S. Fish and Wildlife Service photo by V. B. Scheffer

Rulemaking Actions — March 1978

New Rule Proposed For Changing Lists of Convention Species

The Service has proposed a formal procedure—including public participation—to be used by the United States in seeking amendments to the lists of wildlife and plants protected by the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

The proposed procedure (F.R. 3/24/78) would supplement the final rulemaking issued by the Service on February 22, 1977, which implemented the Convention by the United States. In that ruling no regulatory mechanism was established for making changes in Appendixes I, II, and III to the Convention, which list protected species.

Under the terms of the Convention only the 44 party nations can propose amendments to the appendixes. Adoption of an amendment requires a two-thirds majority of the parties voting, either at a general meeting of Convention nations or by a mail procedure described in the Convention text.

The original lists were negotiated along with the treaty in 1973. They have

been amended once—at the last full meeting of Convention nations in 1976. The next full meeting is scheduled to be held next year.

Petition Process

In the proposed procedure, the Service says that it would accept petitions for the review of the status of any species at any time from interested members of the public. These petitions may seek to add or delete a species, or move a species from one appendix to another. Certain information would be required.

The petitions must be accompanied by supporting biological data on the species in question, including past and present geographic distribution, population estimates and trends and habitat trends. In addition, the petitions must contain trade data—including both legal and illegal commerce and the potential threats they pose to the species; the protection status of the species under national and international regulations and the need for addi-

tional safeguards; information on species of similar appearance; comments on the status and protection needs of the species from authorities in other countries, if the species occurs elsewhere other than in the United States.

Comment Period

If the Service finds that the evidence presented warrants a review, a notice to that effect would be published in the *Federal Register* inviting the public to comment and submit additional information. Following the receipt of comments, the Service would make a determination regarding the petition, which also would be published in the *Federal Register*.

If a petition is accepted, it would be forwarded to the Secretariat of the Convention as an official United States proposal to amend the appendixes. A third notice would be published in the *Federal Register* stating the outcome of the action taken by party nations on the petition and giving the effective amendment date, if approved.

Proposed amendments by other party nations also would be subjected to the same review and public comment procedure to help determine the U.S. position on whether to accept or reject them.

Comments on the proposed procedure should be submitted to the director of the U.S. Fish and Wildlife Service by May 23, 1978.

Comment Period Reopened On Sea Turtle Proposal

The Fish and Wildlife Service and the National Marine Fisheries Service (NMFS) have announced that the period for public comment on an inter-agency proposal to list three sea turtles as Threatened and to establish protective regulations for the species will be reopened for 21 days (F.R. 3/27/78).

The three species are the green (*Chelonia mydas*), loggerhead (*Caretta caretta*), and Pacific ridley (*Lepidochelys olivacea*) sea turtles. The proposed regulations—developed pursuant to section 4(d) of the Endangered Species Act of 1973—were proposed jointly by the NMFS (which is under the Department of Commerce) and the U.S. Fish and Wildlife Service.

Reopening the public comment period was requested by the Environmental Defense Fund.

(continued on next page)



U.S. Fish and Wildlife Service photo by Rex Gary Schmidt

More evidence is being weighed in connection with a proposal to list the loggerhead (above) and two other sea turtles as Threatened.

mental Defense Fund, which argued that more time was needed to submit newly acquired evidence, including affidavits from recognized scientific experts on the sea turtle. The Fund pointed out that the original comment period (following public hearings) had been closed since April 5, 1976, and that consideration of the new evidence was necessary to ensure compliance with the statutory requirement that all listings be made on the basis of the best available scientific and commercial data.

Comments should be submitted, by no later than April 17, to the Acting Assistant Administrator for Fisheries, National Marine Fisheries Service, NOAA, U.S. Department of Commerce, Washington, D.C. 20235.

Leatherback Sea Turtle

Discovery of a leatherback sea turtle (*Dermochelys coriacea*) nesting area in the U.S. Virgin Islands has led the Service to propose the area as Critical Habitat for this Endangered species (F.R. 3/23/78).

The nesting area, a narrow strip of land at Sandy Point Beach, at the western end of the island of St. Croix, constitutes the only known beach under U.S. jurisdiction used extensively for nesting by the leatherback.

A field visit to the site in June 1977 by Service personnel and other U.S. Government officials revealed a total of 76-79 leatherback nests. The visitors also noted evidence in the nesting area of poaching, sand mining, and potential industrial development.

Given that the leatherback is a rare reptile, listed as Endangered since 1970, the Service believes that much of

the hope for the survival and recovery of the species depends upon the maintenance of suitable and undisturbed nesting areas, such as that at Sandy Point Beach.

Comments from the public should be submitted to the Service by May 22. Comments from the Governor of the U.S. Virgin Islands are due by June 21.



U.S. Fish and Wildlife Service photo

This stretch of Sandy Point Beach at the western end of St. Croix has been proposed as Critical Habitat for the leatherback, the sea turtle's only known nesting area under U.S. jurisdiction.

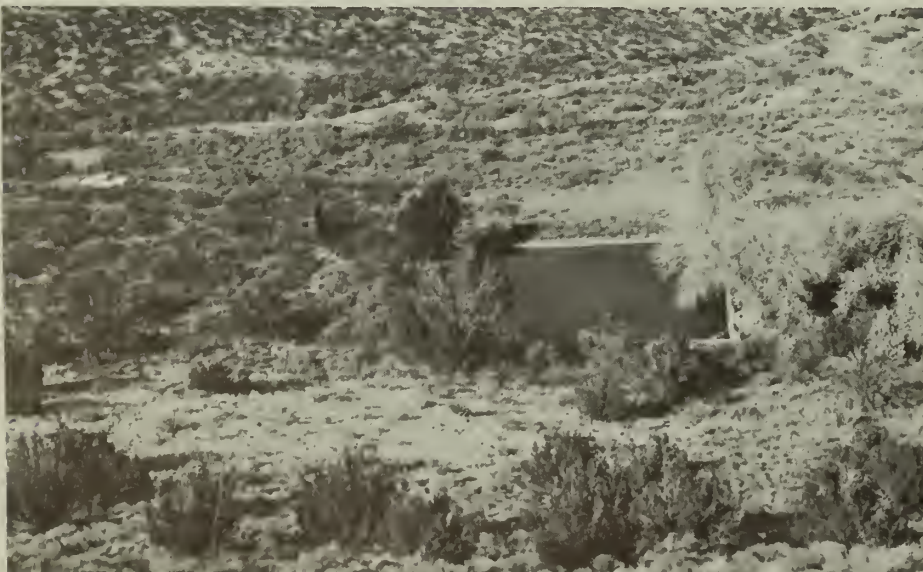
Socorro Isopod

A final rulemaking issued by the Service determines the Socorro isopod (*Exophaeroma thermophilus*) to be Endangered (F.R. 3/27/78).

The species, which occurs only in the Socorro thermal area of central New Mexico, now numbers less than 2,500 individuals. Although human activities have rendered the isopod's natural habitat unusable, the species has managed to survive in an artificial environment—the partially open conduit system of an old bathhouse.

The final ruling, effective April 26, is intended to provide the isopod with needed protection in its present habitat. Such protection, the Service believes, could possibly lead to the eventual reestablishment of the species elsewhere.

The Service's original proposal to list the Socorro isopod was published in the *Federal Register* on December 30, 1977 (see January 1978 BULLETIN). Subsequently, the Governor of New Mexico announced that he supported the proposal. No other comments, from either the general public or the scientific community, were received by the Service. The final ruling, therefore, is the same as the proposal.



New Mexico Department of Game & Fish photo by Mike Hatch

The Socorro isopod lives in an open conduit that feeds thermal water past the old bathhouse (at left) into the swimming pool.

Wolf (continued from page 1)

Among private organizations, the National Audubon Society, the National Wildlife Federation, and the Wildlife Management Institute wrote in favor of the proposal, and the Environmental Defense Fund "cautiously" supported it. The North American Wolf Society was also positive, but questioned the elimination of subspecific listings on the grounds that this could jeopardize efforts to locate and maintain stocks of the various subspecies.

A number of private organizations opposed the proposal. Some, such as the Safari Club International, were against any listing or Critical Habitat designation for wolves in Minnesota. Others, such as the Defenders of Wildlife, Sierra Club, Wilderness Society, and Fund for Animals, objected to anything less than full Endangered status for all wolves in the conterminous United States.

Including petition signatures and form letters, more than 1,000 private citizens supported Endangered status for the Minnesota wolves; 336 supported total declassification in Minnesota; 313 expressed opposition to what they mistakenly termed a wolf "sanctuary" in Minnesota; and 129 suggested that the proposed depredation-control measures were inadequate.

Conclusions

After carefully reviewing all the comments and analyzing the evidence, the Service has determined that the final

rulemaking should be substantially the same as the June 9, 1977, proposal. The only difference is that the final ruling makes some minor modifications in the boundaries of regulatory zones 1, 2, and 4 in the northeastern portion of the State.

In zone 1, which includes most of Superior National Forest, wolves are completely protected. Taking of wolves by authorized Federal and State agents is permitted in the other four zones under special rules covering predator control. But the Service said zones 2 and 3 have practically no livestock; consequently, few, if any, wolves will be taken there.

Therefore, it is expected that most wolves will be taken in zone 4 under depredation-control measures. While the wolf population in this zone might be held below its biological potential, it is expected to continue to exist in reasonable numbers. The Service said these controls will reduce conflicts with human interests and "should create a more favorable public attitude that would be of overall benefit to the wolf."

The Service concluded that the depredation-control measures "are all that can be supported on the basis of currently available data" but that the situation "will be closely monitored."

With regard to subspecies, the Service stated that it will "continue to recognize valid biological subspecies for purposes of its research and conservation programs."

Duck (continued from page 1)

Status Review

But information received from the Service's status review, which was announced last November (see the December 1977 BULLETIN), and other data acquired over the past two years show that while there has been a reduction of wetlands, the Mexican duck is highly adaptable. It has moved out of the river bottoms and colonized small irrigation impoundments and croplands, and can be found from humid pine-oak mountains to arid mesquite grasslands. Moreover, since the 1930's, the duck has expanded its range westward into Arizona and eastward into Texas.

The population of Mexican-like ducks apparently never has been large because of a general lack of water in the Southwestern United States and has remained stable in modern times. The present estimate of these ducks nesting in the United States is 1,000, with perhaps as many as 2,000 in the northern Mexico states of Durango and Chihuahua.

Special attention was accorded the Mexican duck in the 1978 winter water-

fowl survey conducted by the Service in January. The survey yielded a count of 22,470 Mexican and Mexican-like ducks in Mexico, and this is regarded as a conservative estimate of the actual total. A count of 545 Mexican-like ducks was made in southeastern Arizona, southern New Mexico, and western Texas. These tallies are consistent with surveys taken since the early 1960's.

Limited banding of Mexican-like ducks in Arizona, New Mexico, and Texas and field observations indicate they are largely non-migratory, although there are seasonal movements related to local changes in water and food availability. The Mexican duck is reported to be very wary by nature and usually remains widely dispersed in pairs from other ducks. These factors, the Service said, seem to preclude any large-scale harvest of the species, and no evidence was found of overutilization for commercial, sporting, or other purposes.

In January, the American Ornithologist's Union Committee on Classification and Nomenclature of North Ameri-

FWS Extends Comment Period on Fish Listing

Public interest in a proposed rulemaking to list five small southern fishes as Endangered has prompted the Service to extend the deadline for public comments from February 28 to May 30 (F.R. 3/30/78).

The proposal, published in the *Federal Register* on December 30, 1977 (see January 1978 BULLETIN), recommended Endangered status for the Waccamaw darter (*Etheostoma perlongum*), Waccamaw killifish (*Fundulus waccamensis*), and Waccamaw silverside (*Menidia extensa*), found in North Carolina; the Barrens topminnow (*Fundulus* sp.), found in Tennessee; and the Ouachita madtom (*Noturus lachneri*), found in Arkansas.

can Birds classified the Mexican duck a subspecies, *Anas platyrhynchos diazi*, of the common mallard. This classification was restricted to the pure population of the duck in central Mexico. The Mexican-like ducks indigenous to the Southwestern United States and also northern Mexico were classified as intergrades (*Anas platyrhynchos platyrhynchos* x *diazi*) with the mallard.

Conclusion

In summary, the Service said, "The population of Mexican-like ducks in the U.S. consists of intergrades between Mexican ducks and mallards. Population surveys in the United States and Mexico during the past 10-15 years show a relatively stable population of Mexican and Mexican-like ducks. Evidence suggests there is not any present or threatened jeopardy to the continued existence of the Mexican duck in any portion of its range. The Service finds no justification for the classification as Endangered or Threatened for one parental subspecies in a population that is composed of a freely interbreeding population of that subspecies and another conspecific subspecies."

Comments from the public on the delisting proposal must be submitted to the Service by May 30, 1978.

Reference Note

All Service notices and proposed and final rulemakings are published in the *Federal Register* in full detail. The parenthetical references given in the BULLETIN—for example, (F.R. 4/22/78)—list the month, day, and year that the notice or rulemaking was published in the *Federal Register*.

Pending Rulemakings

The Service expects to issue rulemakings and notices of review on the subjects listed below during the next 90 days. The status or action being considered for each final and proposed rulemaking is given in parentheses.

The decision on each final rulemaking will depend upon completion of the analysis of comments received and/or new data made available, with the understanding that such analysis may result in modification of the content or timing of the original proposal, or the rendering of a negative decision.

Pending Final Rulemakings

- 6 butterflies (C.H.)
- Contra Costa wallflower and Antioch Dunes evening primrose (C.H.)
- 13 plants (E, T)
- Grizzly bear (C.H.)
- 15 crustaceans (E, T)
- Whooping crane (C.H.)
- Black toad (T, C.H.)
- New Mexican ridge-nosed rattlesnake (T, C.H.)
- 2 zebras (E)
- 7 Eastern land snails (E, T)
- 12 Western snails (T)
- African elephant (T)
- 2 big-eared bats (E)

Pending Proposed Rulemakings

- 10 North American beetles (E, T)
- 2 harvestmen (E, T)
- 3 mussels (C.H.)
- Rocky Mountain peregrine falcon population (C.H.)
- Colorado squawfish (C.H.)
- Virgin River chub (E, C.H.)
- 2 Hawaiian cave invertebrates (E, T)
- Desert Tortoise (Beaver Dam slope population) (E, C.H.)
- Deregulation of Tecopa pupfish
- Unarmored threespined stickleback (C.H.)
- Puerto Rican whip-poor-will (C.H.)
- Laysan duck (C.H.)
- Bonytail chub (E)
- Razorback sucker (T)

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	33	227	260	3	17	20
Birds	68	144	212	3		3
Reptiles	10	46	56	6		6
Amphibians	5	9	14	2		2
Fishes	30	10	40	10		10
Snails		1	1			
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	4		4			
Total	180	439	619	26	17	43

Number of species currently proposed: 107 animals
1,867 plants (approx.)

Number of Critical Habitats proposed: 40

Number of Critical Habitats listed: 26

Number of Recovery Teams appointed: 59

Number of Recovery Plans approved: 16

Number of Cooperative Agreements signed with States: 21

March 31, 1978

- West African manatee (T)
- 20 Appendix I spp.
- Cui-ui (C.H.)
- Whooping crane (C.H.—additional areas)
- Illinois mud turtle (E, C.H.)
- Key mud turtle (E, C.H.)
- Plymouth red-bellied turtle (E, C.H.)
- 5 Ash Meadow plants (C.H.)
- 7 Oregon freshwater fishes (E, T)
- 24 foreign mammals and 1 bird (E)
- Light-footed clapper rail and California least tern (C.H.)
- Yellow-shouldered blackbird (C.H.)
- Santa Cruz long-toed salamander (C.H.)
- Hawksbill sea turtle (C.H.)
- 2 Virginia fishes (T, C.H.)
- Maryland darter (C.H.)
- 4 Texas/New Mexico fishes (E, T, C.H.)

Pending Notice of Review

- Rhesus monkey in Bangladesh

Abbreviations: E=Endangered, T=Threatened,
C.H.=Critical Habitat

Wildlife Law Conference

The Environmental Law Institute, in cooperation with the Smithsonian Institution, is conducting a conference on "Wildlife Law and Policy" May 22-23 at the Baird Auditorium, National Museum of Natural History, Washington, D.C.

The conference will reexamine major policy issues in relation to the Endangered Species Act of 1973, the Marine Mammal Protection Act, and other statutes bearing upon wildlife management and protection. These issues include the regulation of commerce in wildlife, acquisition of habitat, the indirect protection of wildlife and habitat, and law enforcement. The registration fee is \$185.00. For more information, contact the Environmental Law Institute, 1346 Connecticut Ave., N.W., Washington, D.C. 20036.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

Furbish Lousewort Among 13 Plant Taxa Newly Listed By Service For Protection

Eleven plant taxa—including the Furbish lousewort—have been listed as Endangered and two plant taxa as Threatened in a final rulemaking issued by the Service (F.R. 4/26/78). The ruling becomes effective May 27, 1978.

The Service said the action was taken primarily to protect the plants from threats of habitat destruction. They are found in 12 states and Canada.

The Furbish lousewort (in Canada sometimes called the St. John River wood-betany) (*Pedicularis furbishiae*) is a member of the snapdragon family endemic to the St. John river valley in northern Maine and New Brunswick, Canada. The plant was rediscovered in surveys performed in 1976 and 1977 for the U.S. Army Corps of Engineers in support of an environmental impact

statement for the proposed Dickey-Lincoln School Lakes project. A total of 880 individual plants in 21 colonies were located, with 350 individuals in 13 colonies found within the project's proposed impoundment area.

The Service said that, if the project is completed as planned, 40 percent of the known individuals of the Furbish lousewort would be extirpated. Only 160 would remain in the United States.

The remaining individuals are threatened by dumping, natural landslides, and construction and lumbering near the St. John River, both in Maine and New Brunswick. Until it was found in 1976 by Dr. Charles D. Richards of the University of Maine, the plant had not been collected since 1943 and was thought to be probably extinct.

(continued on page 7)



Photo by Douglas Gruenau

Furbish lousewort is threatened by development in St. John River Valley

Improved Service Regulations Planned For Captive Wildlife

The Service has issued advance notice of a proposed rulemaking to eliminate unnecessary permit requirements relating to captive wildlife and thereby enhance both protection of wild populations of Endangered and Threatened species and propagation of captive populations (F.R. 4/14/78).

The purpose of the advance notice is to make public the alternative approaches presently under consideration and to solicit comments from all interested parties. Such comments should be submitted to the Service on or before June 13, 1978.

In publishing this notice, the Service emphasized that it does not intend to limit its consideration to the alternatives presented in the notice (and outlined below); rather, it is prepared to consider any approaches that may help make captive wildlife regulations more effective.

Need for Improved Regulations

As the Service has learned from practice, the detailed permit requirements and other regulations relating to activities involving captive wildlife, as stipulated under the provisions of the Endangered Species Act of 1973, have hampered zoos and other breeders in their efforts to breed rare wildlife in captivity.

In June 1977, the Service issued new rules for treating the captive populations of certain Endangered species as Threatened, thereby making it easier for zoos and other breeders to engage in interstate and foreign commerce involving these populations (see June 1977 BULLETIN). However, these rules have limited application in that only 11 species having captive, self-sustaining populations (CSSP's) in the United States have been determined to date, although others are currently under

consideration.

As a result, zoos and wildlife breeders have found that the existing regulations stemming from the 1973 act have interfered with their efforts to propagate both Endangered and Threatened species. The need to obtain permits has delayed transfer of surplus animals or breeding stock among institutions.

Alternative Approaches

In considering the most effective ways of revising the current regulations to maintain full protection of wild populations while encouraging propagation of captive populations, the Service has identified three general approaches:

1. Redetermination of status.
2. Issuance of special rules.
3. Extended use of the similarity-of-appearance clause.

(continued on page 5)

Regional Briefs

The Endangered Species Program regional staffs report the following recent developments in their areas:

Region 1. A first group of cui-ui (*Chasmistes cujus*) has successfully negotiated the fishway built in 1976 from Pyramid Lake, Nevada, to spawn in the Truckee River. Cui-ui have been unable to leave the lake to spawn in recent years because of a low water level, caused by diversion of Truckee River waters for irrigation. Some larvae from this year's production will be returned to the Pyramid Lake Hatchery for artificial propagation as part of the cui-ui recovery plan.

An additional population of Santa Cruz long-toed salamanders (*Ambystoma macrodactylum croceum*) has been discovered in the Bennett and McCluska slough areas south of Santa Cruz, California. The two sites are tributaries to Elkhorn Slough.

Region 2. A total of 3,600 Houston toads (*Bufo houstonensis*) have been hatched at the Houston Zoo. This is nearly three times the known population in the wild. Twenty-five hundred are being released back into the capture site to supplement the wild popu-

lation. The remainder will be held at the zoo for release next spring.

The squawfish (*Ptychocheilus lucius*) artificial propagation program at Willow Beach National Fish Hatchery in Arizona has acquired 11 adults of the species which were captured in the Colorado River. An additional 10 to 11 squawfish were expected to be captured in May from the Green River, Utah, for the program.

A total of eight young have been hatched from four of the five bald eagle nests monitored along the Salt and Verde rivers in Arizona. This is a record production for the population.

Region 4. The Florida Manatee Recovery Team, inactive for the past four years, has been realigned and the leader position filled by John Oberheu of the Service's Jacksonville area office. Peter Pritchard, vice president for science and research of the Florida Audubon Society, has been added as a team member.

Region 5. Brian Kinnear has joined the regional staff as a specialist in section 7 consultations. Regional staff members recently have been undergoing training in section 7 regulations and responsibilities.

Region 6. An interagency task force has been formed by the Service, the

Bureau of Land Management, and the National Park Service in Denver to integrate field data on proposed Endangered and Threatened plants in the region. The group also provides information sharing on plant protection.

A memorandum of agreement has been negotiated with the Bureau of Land Management for the Denver Wildlife Research Center to provide black-footed ferret (*Mustela nigripes*) surveys on extensive coal leasing areas in Wyoming.

Alaska Area. Twenty-four Aleutian Canada geese (*Branta canadensis leucopareia*) captured at the Castle Rock, California, wintering grounds have been brought to Amchitka Island. These birds will be released on Agattu Island this summer with some captive-reared Aleutian Canada geese from Amchitka. It is hoped they will serve as "guide" birds during the fall migration to California, and that they will return next year to Agattu and become a nesting population there. Buldir Island currently is the only natural nesting area for the goose.

New Publications

The Colorado Division of Wildlife's Nongame Section staff has published a series of four reports that are available for distribution. These reports are as follows:

Essential Habitat for Threatened or Endangered Wildlife in Colorado, covering fish, bird, and mammalian species. 84 pp; price, \$3.00.

Colorado Bird Distribution Latilong Study, a survey of 405 species. 62 pp; price, \$2.00.

Colorado Mammal Distribution Latilong Study. 20 pp; price, \$1.00.

Colorado Reptile & Amphibian Distribution Latilong Study, covering a total of 89 species. 20 pp; price, \$1.00.

The publications are available from the Nongame Section, Colorado Division of Wildlife, 6060 Broadway, Denver, Colorado 80216. Checks should be made payable to the Colorado Division of Wildlife Fund #5033X.

The proceedings of the 1976 and 1977 symposia of the Desert Tortoise Council are now available. They may be ordered at a cost of \$5.00 per volume from the Desert Tortoise Council, 350 Golden Shore, Long Beach, California 90802.

Correction

In the April 1978 issue of the BULLETIN, the table on page 7 should have listed the minimum breeding population of the river otter in Minnesota as 2,150-7,000. Also, footnote 13 in the table should have read the *untrapped*, instead of the *untagged* part of the New York and Minnesota river otter population.

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North Carolina Shaping 5-Year Endangered Species Program

Major research and management projects are underway in North Carolina to assist the Endangered red-cockaded woodpecker (*Picoides borealis*),* brown pelican (*Pelecanus occidentalis*), and American alligator (*Alligator mississippiensis*) as part of a five-year Federal assistance program recently approved under a cooperative agreement between the State and the U.S. Fish and Wildlife Service.

The State's Endangered Species Program, which is scheduled to receive \$180,000 in Federal assistance in fiscal year 1978, projects a total spending of \$1,110,000 over the five-year period. Of this amount, the State will contribute \$370,000 and the Federal Government \$740,000.

Prior to initiation of this program, the North Carolina Wildlife Resources Commission had maintained a number of projects to help endangered and nongame species. These projects received minimal funding, however, because the commission was financed almost entirely by revenues from hunting and fishing licenses. Although consideration is being given to requesting State general fund monies to support this program, at the present time the State's share continues to come from this licensing revenue, which totals about \$7 million a year. The commission also receives more than \$1 million in Federal aid receipts through the Pittman-Robertson and Dingell-Johnson programs.

In 1975, the general assembly authorized a public contribution program to help expand the endangered and nongame species projects then in progress. Called the Carolina Conservationist, this program has produced nearly \$3,750 through contributions since being implemented in July 1976, and it has generated public support for additional nongame and endangered species conservation measures. The program is administered by the Division of Information and Education.

*In 1976, a committee of the American Ornithologists Union voted to change the scientific name of the red-cockaded woodpecker from *Dendrocopos borealis* (as originally indicated on the U.S. List of Endangered and Threatened Species) to *Picoides borealis*.

Listed Species

Only federally listed Endangered and Threatened animal species are now officially designated by the N.C. Wildlife Resources Commission. In addition to the red-cockaded woodpecker, American alligator, and brown pelican, they include the American peregrine falcon (*Falco peregrinus anatum*), Arctic peregrine falcon (*Falco peregrinus tundrius*), Bachman's warbler (*Verimivora bachmannii*), bald eagle (*Haliaeetus leucocephalus*), eastern cougar (*Felis concolor cougar*), gray bat (*Myotis grisescens*), Indiana bat (*M. sodalis*), ivory-billed woodpecker (*Campephilus principalis*), Kirtland's warbler (*Dendroica kirtlandi*), leatherback turtle (*Dermochelys coriacea*), manatee (*Trichechus manatus*), shortnose stur-

geon (*Acipenser brevirostrum*), and spotfin chub (*Hybopsis monacha*).

(All other nongame species also receive State protection, unless special seasons are authorized for harvest or other special management purposes.)

Last December, the U.S. Fish and Wildlife Service proposed adding three more fish found only in North Carolina to the Federal Endangered list. They are the Waccamaw darter (*Etheostoma perlongum*), Waccamaw killifish (*Fundulus waccamensis*), and the Waccamaw silverside (*Menidia extensa*).

Candidate Species

Many more candidate species of vertebrates and plants have been identified by wildlife biologists as in need of special protection by the State. In 1975, a symposium conducted by the North Carolina Museum of Natural History assessed the status of wildlife and plants in the State, and determined that a substantial number were in jeopardy. Of the State's 663 species and subspecies of vertebrate fauna, 33 taxa were considered to be endangered, 28 threatened, 84 of special concern, and 51 of additional concern (but so little known that they had to be classed as "status undetermined").

In the plant category, symposium botanists identified 91 species as of "primary concern" and 319 of additional concern. About 12 percent of the State's nearly 3,400 plant taxa were found to be in jeopardy. (At the present time, there is no State agency having clear-cut authority to establish regulations and programs on behalf of endangered or threatened plant species.)

Thus, it is expected that the base of the State program will broaden considerably when sufficient data are acquired to warrant the listing of resident species for State protection.

Program Direction

The director of the N.C. Wildlife Resources Commission has placed the endangered animal species program under the Interagency Wildlife Coordination Section of his office. This section, headed by Frank B. Barick and budgeted at \$218,000 for the current fiscal year, serves the program administratively. Program direction is pro-

(continued on next page)



Drawing by Duane Raver

North Carolina is coordinating several research and management projects to conserve the Endangered red-cockaded woodpecker. This print was used in Carolina Conservationist fund drive.

vided by an Endangered Species Advisory Committee, which includes wildlife biologists from universities in the State as well as representatives of conservation organizations (the Audubon Society and North Carolina Wildlife Federation). In addition, coordination with other State and Federal agencies is effected through an Endangered Species Interagency Task Force, with representatives from 9 State agencies and 12 Federal agencies.

The advisory committee is responsible for developing recommendations to the wildlife commission on designating species as endangered or threatened, research program elements and priorities, and restoration projects, plus the development of policy, regulations, and appropriate legislation. Recommendations prepared by the interagency task force regarding elements of the program must be approved by the advisory committee before being implemented.

By involving all agencies and interests concerned with the environment and wildlife in the administration function, the program is designed to identify potential areas of conflict between the actions of individual agencies and endangered species—and then work toward a solution. Some of the Federal assistance funding has been earmarked to support this coordinating function of the program.

Once restoration procedures are developed by the coordination section, Barick says, "they are implemented through the commission and other concerned agencies. Among the first elements in the restoration program is protection from taking and commercialization in accordance with regulations adopted by the commission and enforced by wildlife enforcement officers. Other measures include habitat acquisition, habitat management, live-trapping, and transplanting. These measures would normally be conducted by the commission's Divisions of Game and Inland Fisheries. In addition, other public land-owning agencies would participate in these efforts."

Red-cockaded Woodpecker

State program coordination is well illustrated in the projects to aid the red-cockaded woodpecker. The commission, through its Division of Game (and partially supported by a U.S. Fish and Wildlife Service Federal aid grant of \$70,000), has embarked upon a management plan for red-cockaded woodpecker colonies inhabiting the State-owned Sandhills Game Land in the southeastern region of North Carolina.

The game land is comprised of 57,250 acres of noncontiguous tracts and is believed to contain a woodpecker population of between 160 and 400 birds, which nest, for the most part, in mature longleaf pine trees (*Pinus pa-*

lustris). The habitat is generally characterized by a thick understory of turkey oak (*Quercus laevis*) and wiregrass (*Aristida stricta*) ground cover. Biologists have noted a correlation between the frequency of the woodpecker and the frequency of burning the understory to remove vegetation that obscures nesting cavities in the pines.

Under guidelines being developed for the management plan, nesting trees would be identified and protected from timber cutting. In addition, a 200-acre pine "support stand" or feeding area would be maintained adjacent to colony areas. All colony areas will be burned every three years after all vegetation has been cut away from around the base of each nesting cavity tree.

The plan also would preserve numbers of mature pines (60 years or older) in the timber rotation program as habitat for potential expansion of the woodpecker population.

At the same time the management plan is being put into effect, the commission also is launching a number of research projects with \$95,600 provided under its fiscal year 1978 Endangered Species Program grant from the Service. These projects include an evaluation of the effects of controlled burning on woodpecker colonies within the Sandhills Game Land and a

Propagating Loggerheads at Camp Lejeune

The U.S. Marine Corps Camp Lejeune training base on North Carolina's coast, through the work of the base ecologist, Julian Wooten, is becoming a prime production center for the Atlantic loggerhead sea turtle (*Caretta caretta*), which has been proposed for Threatened status.

For the past four summers, Wooten has been observing loggerheads as they crawl across Onslow Beach—long used by Marine recruits to practice amphibious assaults—to lay their eggs. He noted that about 90 percent of the 40 to 50 nests were being destroyed by such predators as foxes, raccoons, opossums, and feral cats.

In 1975, Wooten began placing protective wire cages over every turtle nest (each loggerhead lays about 100 eggs) and has succeeded in keeping most of them intact. Where the nesting site was producing at most only a few hundred loggerhead hatchlings, production has jumped to more than 2,000 a year. He now estimates that about 80 percent of all eggs laid on the beach hatch.

Wooten also assists the newly hatched turtles from the protected nests and releases them into the surf. Adult turtles are tagged to collect data on their migration habits.

study of timber management practices in this and other habitat areas.

While the status of the woodpecker remains undetermined, earlier studies have indicated that several hundred colonies of birds may exist in eastern and southern portions of North Carolina. Surveys will be performed to map the location of colonies throughout the State, and researchers also will attempt to determine population trends while studying the structure and productivity of nesting populations.

Habitat types preferred by red-cockaded woodpeckers also will be characterized, in hopes of gathering data needed to recommend Critical Habitat designation for the bird in North Carolina. Upon completion of the research, a final report will be prepared and management recommendations formulated to assist in preparing a final recovery plan for the woodpecker, which ranges from Virginia to Texas.

Brown Pelican

A colony estimated at 200 brown pelicans nests on Shell Island, a small sandbar in Pamlico Sound near Ocracoke, North Carolina—the most northerly breeding colony of the species in the United States. Ornithologists have been puzzled as to why the colony limits itself to this one island, even though there is suitable habitat between the island and the next breeding colony about 300 miles south at Cape Romain National Wildlife Refuge near McClellenville, South Carolina.

With assistance from the Service, North Carolina's researchers will attempt to answer this question and determine ways that the bird may be induced to occupy other sites, perhaps similar islands created for this purpose from sand dredged to maintain coastal shipping channels. Mortality factors of the colony, which has remained stable for the past decade, also will be studied as well as food habits and other basic life history elements.

Alligator Investigations

Coastal swamplands are being studied to learn the State distribution and population of alligators. While the species is known to occur as far north as Dare County, North Carolina, the status of the species has not been described in the State. In a preliminary investigation last year, Manley Fuller, a North Carolina State University graduate student, captured and tagged about 52 alligators in and around Lake Ellis Simon. His research will continue this summer in an effort to establish population indices, investigate habitat preferences, and acquire information on the species' growth rates. Fuller's past work has been supported by the university, the National Wildlife Federation, and the North Carolina Museum of Natural History.



N.C. Wildlife Resources Commission photo by Ken Taylor

The Neuse River waterdog, a salamander, may be a candidate for Federal protection.

The commission's studies will provide basic information on breeding, feeding, wintering habitats, limiting factors, and other data applicable to management procedures.

Additional Studies

In coming months, as arrangements for studies are completed with university contractors, the commission expects to launch research projects on the Lake Waccamaw fishes, bobcat, river otter, Neuse River waterdog, peregrine falcon, bald eagle, eastern cougar, Indiana bat, gray bat, and Florida manatee. The latter five are Endangered species which are extremely rare in the State, with only a few sightings reported in recent years. There has been no confirmed sighting of the eastern cougar, except for one hair sample found on a fence three or four years ago. The cougar was extirpated east of the Mississippi in the early part of this century. But in recent years there has been an increasing number of reports of the cat sighted in eastern seaboard states, which some biologists believe may indicate a return of the species to its historic range.

Neuse River Waterdog

A preliminary study which was recently supplemented with \$1,400 in Carolina Conservationist funds concerns the Neuse River waterdog (*Necturus lewisi*), an endemic salamander known to exist in the drainages of North Carolina's Neuse and Tar Rivers. The North Carolina Museum of Natural History has proposed a follow-on study to obtain data on the salamander's status to determine if Federal listing of the species is warranted.

The waterdog has been designated by the museum as a species of "special concern" because of habitat destruction, particularly along the Neuse River. A portion of its habitat appears to be imminently threatened by a proposed U.S. Army Corps of Engineers dam near Raleigh.

Educational Programs

Wildlife in North Carolina, the commission's monthly magazine, has been utilized as the agency's primary educational tool in behalf of rare and endangered species. In addition to periodic articles on the subject which appear throughout the year, the July issues of this publication carry a general rare and endangered species theme with related program reports, articles, and other information.

The Carolina Conservationist program was established to supplement educational efforts as well as a vehicle for channeling funds through the commission for endangered species research. With the assistance of Carolina Conservationist and Federal grant-in-aid funds, the State is now embarking on an accelerated public information program. Under the direction of A. Sidney Baynes, chief of the wildlife resources commission's Division of Information and Education, a television spot announcement is being produced on State and national conservation efforts, with emphasis on the problem of environmental degradation. Thus far, the Carolina Conservationist has purchased filmstrips on endangered species from the National Wildlife Federation, prepared posters and prints of original paintings of the brown pelican and red-cockaded woodpecker, and mailed out numerous fliers on the State program. The agency is preparing a slide/tape program and a publication on North Carolina's endangered species for public distribution.

"We've compared our program to those in other states," Baynes says, "for what we want is a good, sound educational program that appeals to lots of people. Such programs are not measured by the revenues they generate, but often in more intangible terms. We have had to spend more money than we've taken in in this program, but it doesn't matter as long as we're helping to educate the public about the plight of our endangered and threatened species."

Status redetermination would involve determining whether or not certain captive populations may constitute separate species under the terms of the 1973 act and, if so, whether or not these species could be reclassified to the Threatened category or declassified altogether.

The Service believes that reclassification or declassification should be considered only for those species in which wild populations are and will continue to be sufficiently protected.

In particular, the Service believes that status changes should not be made on the assumption that the Convention on International Trade in Endangered Species of Wild Fauna and Flora will provide compensatory protection. Although many of the species listed under the 1973 act are also listed in the appendixes to the Convention, changes in the appendixes are subject to international agreement irrespective of U.S. approval or disapproval. In addition, the Service has had cause to question the validity of some foreign documents issued in response to Convention requirements.

Issuance of special rules would be based on the fact that, if captive populations of Endangered species are reclassified as Threatened, it is permissible under the 1973 act to establish special rules for those populations.

Any such rules, in the Service's view, must be compatible with and conducive to conservation of both wild and captive populations. In addition, the Service believes it is essential to make sure that there is a reduction or elimination of the current permit requirements for many of the normal practices in captive species propagation.

In keeping with these goals, the Service has identified several specific types of special rules that warrant consideration. These include:

- requiring people holding captive individuals to keep records and report transactions to the Service
- establishing regulations under which taking (as defined in the 1973 act) and other activities that are now allowed by permit for Threatened species would be allowed for captive populations without the need for permits.

Extended use of the similarity-of-appearance clause of the 1973 act would involve a determination that a specific captive population is no longer Endangered or Threatened biologically but should still be treated as such to protect the wild population.

Although a similarity-of-appearance listing carries the same prohibitions as do Endangered and Threatened status, the application requirements and issuance criteria for permits are less detailed than those for other permits.

Rulemaking Actions – April 1978

Protection Sought For Bonytail Chub, Razorback Sucker

The Service has issued a proposed rulemaking to determine the bonytail chub (*Gila elegans*) as Endangered and the razorback sucker (*Xyrauchen texanus*) as Threatened (F.R. 4/24/78).

Both fishes are recommended for listing under the Endangered Species Act of 1973 because their populations have been greatly reduced, primarily as a result of habitat alteration and destruction, and because prospective habitat modification threatens their continued existence.

The two species are found only in the Colorado river system, and their known range covers portions of Arizona, California, Colorado, Nevada, New Mexico, and Utah.

The Service has set the following deadlines for submission of comments on this proposed ruling: June 26 for the public, and July 24 for the Governors of the six States involved.

Bonytail Chub

The historic range of the bonytail chub encompasses both the upper and lower basins of the Colorado river system. The fish apparently prefers to live in eddies adjacent to the swiftly flowing waters of the system's turbid mainstream rivers.

The lower basin populations have been almost extirpated by habitat loss stemming from river impoundment and diversion. Much of the lower basin now consists of reservoirs and cold tailwaters.

Although large adult bonytails have been found in such reservoirs as Lake Mead and Lake Mohave, and spawning has also been observed, no young have been discovered; consequently, these reservoir populations probably will disappear as the fish grow older and die.

The cold tailwaters do not support bonytail populations since this species does not spawn when the water temperature is under 65° F. Elsewhere in the lower basin, primarily in the Gila river system, water diversion for irrigation projects has caused a loss of instream flows and consequently of bonytail habitat.

Bonytail chub decline in the lower basin may also have been hastened by competition with introduced species of fish, which now outnumber native fishes in the Colorado river system as a whole. Some biologists believe that

exotic shiners prey on larval bonytails and that bass, sunfish, and catfish prey on young bonytails.

In the upper basin, bonytail populations have declined greatly during the past two decades. For example, on the Green River above Flaming Gorge Dam, the decline started after the reservoir became stabilized near its planned capacity in 1966. Since then, there has been no record of bonytail reproduction in the reservoir.

Razorback Sucker

Once abundant enough to be caught and sold as food by the early settlers, the razorback sucker is native to the large rivers of both the upper and lower basins. Its preferred habitat appears to be slow-flowing backwater areas, where it feeds on bottom detritus and possibly on plankton.

In the lower basin, the razorback sucker is missing from the cold tailwaters of the high dams. Consequently, the species is no longer found in the Grand Canyon stretch of the Colorado River.

Although the razorback does occur in the lower basin's reservoirs, it is questionable as to whether these populations will prove to be self-sustaining. Evidence suggests that, after dam

closure, the adult population in a reservoir persists for about 30 years (roughly the maximum age of the fish) and then disappears.

At present, razorbacks are abundant in Lakes Mead, Mohave, and Havasu; however, although spawning has been observed, no juveniles have been discovered. Nevertheless, some individual fishes appear to be young enough to suggest that at least some recruitment has occurred since closure of the dams. At issue, therefore, is whether or not such recruitment will prove to be sufficient to maintain the reservoir populations on a long-term basis.

Razorback distribution in the upper basin does not indicate much lessening of the fish's original range. However, upper basin populations are declining as a result of habitat alteration and possibly competition with and predation by introduced species. Furthermore, although most experts believe that some recruitment is occurring, no juvenile razorbacks have been found in recent surveys and the future of the upper basin populations remains uncertain.

The proposed rulemaking includes special provisions that would allow the taking of razorback suckers in accordance with State law.

Little Kern Golden Trout

In a final rulemaking issued by the Service, the Little Kern golden trout (*Salmo aguabonita whitei*) has been listed as Threatened and its entire range (in Tulare County, California) has been designated as Critical Habitat (4/13/78).

The ruling, effective May 15, recognizes that the species is threatened principally by hybridization with rainbow trout. The Service also noted its concern that the quality of water in the Little Kern river system could possibly deteriorate as a result of uncontrolled use of off-road vehicles, improper road construction, careless logging activities, pollution from mining, and livestock overgrazing in the system's drainage basin.

Comments on Proposal

The original proposal was published in the *Federal Register* on September 1, 1977 (see October 1977 BULLETIN).

Subsequently, the Service received generally supportive comments from the State of California, the U.S. Forest Service, two national conservation groups, one local conservation group, one natural history museum, and six private citizens.

In addition, the State of California identified several specific types of threats to water quality in the Little Kern river system, and the Forest Service suggested a minor change in the Critical Habitat boundary and a correction of the reference to forestry practices. All these suggestions were incorporated into the final ruling.

Greenback Cutthroat Trout

According to a final rulemaking issued by the Service, the greenback cutthroat trout (*Salmo clarki stomias*) has recovered to the point where it can be reclassified from Endangered to Threatened (F.R. 4/18/78).

(continued on next page)

Found only in Colorado, the fish was originally listed as Endangered primarily because of extensive hybridization with introduced trout and widespread habitat alteration. In recent years, the efforts of the Federal Government and the State of Colorado have resulted in reduction of introduced trout and successful reintroduction of the Endangered subspecies within its historic range. Consequently, the greenback cutthroat trout no longer faces imminent extinction.

The new ruling, effective May 18, includes a special regulation allowing the fish to be taken by sports fishermen in accordance with Colorado State law. There is evidence that such a regulated take in certain areas may be beneficial to the subspecies.

Comments on Proposal

The Service's original proposal to reclassify the greenback cutthroat trout was published in the *Federal Register* on September 26, 1977 (see October 1977 BULLETIN). Subsequently, the U.S. Forest Service, the National Park Service, and the Division of Wildlife of the Colorado Department of Natural Resources (responding for the State) all concurred with the proposal.

One national conservation organization submitted comments expressing concern over the special regulation allowing a regulated take. However, the Service decided to leave the original proposal unchanged, in that it carries sufficient provisions for the State of Colorado to effectively regulate sport fishing of the subspecies.

Regulations Revised On Threatened Species

The Service has taken final action to correct an omission in previously published regulations, thereby assuring their application to Threatened species as well as to Endangered species (F.R. 4/28/78).

Promulgation of this special rule was deemed necessary to correct regulations published in the May 11, 1976, *Federal Register*, which should have included the following wording as part of an amendment to § 17.31(a): "all of the provisions in § 17.21 shall apply to threatened wildlife, except § 17.21(c) (5)." Inclusion of the clause was important to clarify a difference in treatment between Endangered and Threatened species under state cooperative agreements with the Service.

Sixteen comments were received from the public on the proposed corrective ruling, which was published by the Service on September 16, 1977 (see October 1977 BULLETIN). Only one organization, which interpreted the proposal as a new regulation rather than a correction, opposed the ruling.

Plants (continued from page 1)

The 13 plants listed in the rulemaking were among a total of 1,783 proposed for Endangered status in the June 16, 1976, *Federal Register*. The proposal was a subject of four public-hearings conducted by the Service in 1976 (see the September 1976 BULLETIN) and elicited 425 comments.



Photo by F. G. Meyer, National Arboretum
Virginia round-leaf birch

Last year four plants in the proposal—all from San Clemente Island, California—were listed as Endangered (see the September 1977 BULLETIN). An additional 1,404 native plants remain under review; all but four were included in a Smithsonian Institution report covering 3,187 vascular plants, which was published as a notice of review in 1975 (F.R. 7/1/75).

Endangered Plants

In addition to the Furbish lousewort, the following plants were determined to be Endangered in the current final rulemaking:

Hairy rattleweed (*Baptisia arachnifera*). A member of the pea family, the rattleweed is known from southern Wayne County to northern Brantley County in Georgia—an area where pines are clear-cut for timber and pulp. The Service said the plant appears to be capable of surviving the clear-cutting, but subsequent methods for site preparation and replanting of pines have greatly reduced the distribution of the species.

Virginia round-leaf birch (*Betula uber*). This birch, which had been regarded as probably extinct since 1914, was rediscovered in 1975 along Cressy Creek, in Smyth County, Virginia. Only 14 mature trees, 1 three-stemmed

shoot, and 21 seedlings have been found, making the species extremely vulnerable. Since their rediscovery, two trees have died, several seedlings have been removed for scientific purposes and several more stolen; all but two of the remaining seedlings were damaged by vandals. Landowners have erected fences around the trees to protect them. A propagation program to provide a cultivated source for the species has been started at the National Arboretum, which is located in Washington, D.C.

Santa Barbara Island liveforever (*Dudleya traskiae*). This member of the stonecrop family is endemic to the is-



Photo by Reid Moran
Santa Barbara liveforever

land, and is under threat from introduced European hares. The species had not been collected since 1968 when, in 1975, several plants were found regenerating from stubs gnawed to the ground by the hares. Subsequently, a few hundred more plants were discovered on the face of a cliff, where they are protected from the hares. The Service said, however, that the eventual recovery of the liveforever, as well as other endemic plants on the island, will depend upon continued efforts of the National Park Service to control the hare population.

Eureka evening primrose (*Oenothera avita* ssp. *eurekensis*) and **Eureka dune grass** (*Swallenia alexandrae*). The populations of these plants are restricted largely to the base and slopes of the Eureka Dunes, a unique formation of sand in California's Inyo County, which in recent years has been used for off-road vehicle recreation. The Service said the survival of the two taxa will depend upon strict enforcement of a Bureau of Land Management order in late 1976 closing the dunes to off-road vehicles (see the March 1977 BULLETIN).

Antioch Dunes evening primrose (*Oenothera deltoides* ssp. *howellii*) and **Contra Costa wallflower** (*Erysimum*

(continued on next page)

capitatum var. *angustatum*). These two flowers are endemic to the Antioch Dunes, which formerly covered approximately 500 acres of the Sacramento-San Joaquin River's south bank in Contra Costa County, California. Agricultural and industrial activities have reduced the original dunes by 90 percent. Only 28 Contra Costa wallflowers were found during a February 1977 visit to the dunes by Dr. Paul Opler of the Service's Office of Endangered Species.

Persistent trillium (*Trillium persiens*). All of the populations of this member of the lily family are found within four miles of each other in the Tallulah-Tugaloo river system in Rabun and Habersham Counties, Georgia, and Oconee County, South Carolina. Because of its restricted distribution, the Service believes the species could be adversely affected by development, particularly in Tallulah Gorge and surrounding ravines, where most of the plants are found. Silvicultural practices at the edge of the gorge also could have an adverse impact on the plant's habitat. Efforts are being made to propagate the species, so that an alternate source will be available for collectors.

Hawaiian wild broad-bean (*Vicia menziesii*). The major threat to this member of the pea family appears to be feral animals which feed on the beans. Tagging may also be a problem. Because only small populations of the species have been located on Mauna Loa on the Island of Hawaii, its continued existence is regarded as extremely precarious. The wild broad-bean is thought to contain L-dopa, a chemical used in the treatment of Parkinson's disease, and also has potential as an ornamental.

Texas wild-rice (*Zizania texana*). This aquatic grass is restricted to a small section of the upper San Marcos River in Hays County, Texas. The plant has been threatened by the suppression of aquatic vegetation in Spring Lake and parts of the park system of the city of San Marcos—activities which recently have been halted. (The debris resulting from the mowing and ploughing of vegetation floated downstream and entangled in the inflorescences of Texas wild-rice, dragging the plants under water and apparently precluding sexual reproduction.) Commercial utilization and pollution from sewage in the river may have an adverse effect on the species' habitat. The Service said recovery of the grass will depend upon conservation of its habitat and research to identify the factors preventing reproduction.



Photo by Robert Read

Northern wild monkshood

Threatened Plants.

The following plants were determined to be Threatened:

Northern wild monkshood (*Aconitum noveboracense*). This member of the buttercup family is now known in only 14 colonies: one in Ulster County, New York; one in Summit County, Ohio; one each in Allamakee, Clayton, and Jackson Counties, Iowa; one in Richland County, two in Sauk County, and six in Vernon County, Wisconsin. The wildflower's disjunct distribution probably dates from the Ice Age when glaciers apparently destroyed intervening populations. The surviving colonies generally are restricted to moist soil pockets at the bottom of cliffs and many are vulnerable to extirpation. The New York colony parallels a road and would be adversely affected if the road is widened. The Ohio colony is in an urban park where it has been surrounded by construction projects. The Jackson County, Iowa, colony is in a private pasture. Construction of the La Farge Dam in Wisconsin would destroy three to five of the colonies in the State, depending upon the level of impounded water. Three of the Wisconsin colonies are in protected areas, as is the one in Clayton County, Iowa. About 475 individual plants are located in these four areas.

Rydberg milk-vetch (*Astragalus perianus*). The Smithsonian Institution report in 1975 said this member of the pea family was possibly extinct because it had last been collected near Marysville in Piute County, Utah, in 1905. But in 1975, the plant was found in Piute and Garfield Counties, Utah, in areas used for sheep grazing. The Service said the Piute County popula-

tion of about 100 plants is in the Fish Lake National Forest of the Tushar Mountains (at an altitude of 10,000 feet) and could be affected by temporary road construction to service mineral exploration. Road maintenance also could jeopardize the second population on Mount Dutton, which is situated in Dixie National Forest at an altitude of 10,600 feet.

Conflict With Development

The Service noted that several proposed Federal projects or activities could potentially jeopardize the newly listed plants. But the Service said it believes all of the species can be conserved with only minor modifications in the use of their habitat, and at little expense, or simply by recognizing their existence in management of their habitats. The Service anticipates that any conflicts can be resolved through consultations with involved Federal agencies under section 7 of the Endangered Species Act of 1973.

Comments on the Proposal

This final rulemaking also summarized the 425 general comments received on the proposal of June 16, 1976. The Service said less than one percent opposed conservation of Endangered and Threatened plants. Many of those favoring conservation supplied additional data on the plants in the proposal as well as on other plants that may be possible candidates for listing.

More than 35 individuals recommended that the Service propose all of the 1,783 plants in the review for inclusion on the appendixes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. The Service is considering proposing those U.S. plants that meet the Convention's criteria and would benefit from such a listing.

Some concern was expressed in the comments as to whether the Service has authority under the law to list plant varieties as well as plant subspecies and full species as Endangered or Threatened. The Service said that Congress has clearly indicated in section 3(11) of the act defining the term "species" that infraspecific taxa should be included and conserved. As the rank variety has been used by botanists as the major infraspecific subdivision for many plants, the Service said, it appears appropriate to consider plant varieties for determination as Endangered or Threatened.

Numerous plant varieties were included in the proposal covering 1,783 plants and the current rulemaking designates one plant variety, the Contra Costa wallflower, as Endangered.

24 Foreign Mammals and 1 Foreign Bird Proposed As Endangered

To help provide protection for 25 foreign species and subspecies, the Service has issued a proposed rulemaking recommending that they be listed as Endangered under the Endangered Species Act of 1973 (F.R. 4/19/78).

If formally listed as Endangered, none of the 24 mammals and 1 bird (or parts or products thereof) could be imported into the United States other than by permit for scientific or other limited purposes. Furthermore, within the United States, interstate shipment for commerce would be prohibited. In addition, the U.S. Government would be permitted to enter into bilateral or multilateral agreements with the countries in which the animals are resident to promote conservation activities.

The Service obtained information on the status of the 24 mammals from the Red Data Book (1972 edition) of the International Union for the Conservation of Nature and Natural Resources (IUCN) and from Jane Thornback of the Fauna Preservation Society. All 24 mammals were listed in the Red Data Book as endangered, and are also so recognized by Thornback, who is preparing an updated edition of the book. Information on the bird proposed for listing was received from Holly A. J. Nichols, an expert on West Indian parrots, and Warren King of the International Council for Bird Preservation.

Comments on this proposal should be submitted to the Service by July 18, 1978.

Name/Distribution	Comments
Ryukyu rabbit (<i>Pentalagus furnesi</i>), Ryukyu Islands	Very restricted range, limited habitat; endangered by habitat loss, predation; latest population estimate (1964): 500-900.
Simien fox (<i>Simia simensis</i>), Ethiopia	Population less than 500; endangered by habitat loss due to human use, shooting due to unearned reputation as sheep killer.
Malabar large spotted civet (<i>Viverra megaspila civettina</i>), southern India	No recent sightings, may already be extinct; decline due to persecution by man and loss of habitat to agricultural activities.
Fea's muntjac (<i>Muntiacus feae</i>), southern Burma, northern Thailand	Restricted range; vulnerable to hunting pressure; locally popular as meat animal.
Formosan sika (<i>Cervus nippon taiouanus</i>), southern Taiwan mountains	Decline due chiefly to uncontrolled hunting for meat; captive herd of 100-200 kept on Lu-tao (island); wild pop. less than 300.
Ryukyu sika (<i>Cervus nippon keramae</i>), Ryukyu Islands	Decline due mostly to hunting; range now reduced to one islet and possibly three other islands; islet pop. was 30 in 1964.
North China sika (<i>Cervus nippon mandarinus</i>), Shansi Province and possibly Chihli Province, China	Range and population have declined greatly owing to uncontrolled hunting and habitat loss to agriculture; raised for food on a few farms north of Peking.
Shansi sika (<i>Cervus nippon grassianus</i>), western Shansi Province, China	Present status and distribution unknown; has been overhunted for antlers for medicinal properties; habitat loss to farming.
South China sika (<i>Cervus nippon kopschi</i>), Yangste valley, China	Once widespread; currently, a few may survive in Yangste valley; decimated by overhunting for antlers for medicinal values.
Corsican red deer (<i>Cervus elaphus corsicanus</i>), Corsica, Sardinia	Decline due to uncontrolled hunting; poaching occurs on Sardinia, where deer is limited to 2 or 3 localities and numbers in low hundreds; may be extinct on Corsica.
Barbary deer (<i>Cervus elaphus barbarus</i>), Tunisia, Algeria, Morocco	Decline due to habitat loss and continued poaching; now limited to small region on Algerian-Tunisian border; pop. about 400.
Yarkand deer (<i>Cervus elaphus yarkandensis</i>), Chinese Turkestan	Decline due to overhunting and habitat loss; once widespread; now greatly reduced in range and numbers almost to extinction.
Bactrian deer (<i>Cervus elaphus bactrianus</i>), southern USSR, northern Afghanistan	Decline due to habitat disruption and (especially in USSR) poaching for meat; now down to a few remnant groups totaling 500.
Western giant eland (<i>Taurotragus derbianus derbianus</i>), Senegal to Ivory Coast	Poaching is chief cause of decline; also habitat loss; Senegal has most—under 200; a few in Mali; probably extinct elsewhere.
Jentink's duiker (<i>Cephalophus jentinki</i>), Sierra Leone, Liberia, Ivory Coast	Endangered by excessive subsistence hunting, habitat disruption; pop. no more than a few hundred; probably limited now to Liberia.
Tora hartebeest (<i>Alcelaphus buselaphus tora</i>), Ethiopia, Sudan, southern Egypt	Occurs in much of former range, but depleted by excessive subsistence hunting, habitat degradation; Sudan pop. 200-300 (1965).
Swayne's hartebeest (<i>Alcelaphus buselaphus swaynei</i>), Somalia, Ethiopia	Endangered by excessive subsistence hunting, habitat disruption; probably extinct in Somalia; under 700 left in Ethiopia, where poaching common although legally protected.
Zanzibar suni (<i>Nesotragus moschatus moschatus</i>), Zanzibar, nearby islets	Decline due to excessive subsistence hunting, habitat destruction; once common, now nearly extinct, but probably survives.
Sand gazelle (<i>Gazella subgutturosa marica</i>), Jordan, Arabian Peninsula	Endangered chiefly as result of mechanized hunting; overgrazing has degraded habitat; still common in a few desert areas.
Saudi Arabian gazelle (<i>Gazella dorcas saudiya</i>), Israel, Iraq, Jordan, Syria, Saudi Arabia, Kuwait	Population greatly depleted by mechanized hunting. Israel population estimated to be 500 animals in 1964.
Pelzeln's gazelle (<i>Gazella dorcas pelzelni</i>), Somalia	Chief decline around 1900 due to uncontrolled hunting; overgrazing since then has destroyed habitat; range now very limited.
Arabian gazelle (<i>Gazella gazella arabica</i>), Arabian Peninsula, Israel	Endangered by habitat destruction through overgrazing, widespread hunting (including motorized hunting); range greatly reduced.
Arabian tahr (<i>Hemitragus jakakari</i>), Oman	Endangered by excessive hunting pressure, limited and vulnerable habitat.
Red-necked Amazon parrot (<i>Amazona arausiaca</i>), Dominica	Abundant in 1930's but reduced to about 350 by 1977 by excessive hunting for food, pets, and as pests (eats fruit and nuts).
Iriomote cat (<i>Mayailurus iriomotus</i>), Iriomote Island, Ryukyu Islands	Endangered by habitat destruction caused by extensive farming; caught in traps set for wild pigs; no more than 30-40 cats survive.

65 Foreign Endangered Taxa Under Review By FWS

The status of 65 foreign animal taxa listed as Endangered is being reviewed by the Service to determine whether or not any of them should be reclassified as Threatened or should be removed entirely from classification under the Endangered Species Act of 1973 (F.R. 4/19/78).

The 65 mammals, birds, reptiles, and amphibians were among the 159 animal taxa listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, and designated as Endangered by

the Service on June 14, 1976 (see July 1976 BULLETIN). At that time, the Convention was not yet in force and all 159 taxa were considered by their nominating countries to be threatened by unregulated international trade.

Having since been ratified by 44 countries, the Convention is now considered an effective regulator of trade in jeopardized wildlife. Accordingly, the Service believes that unregulated trade no longer is a major factor threatening the continued existence of the 159 Endangered taxa.

Common Name	Scientific Name	Distribution
Langur	<i>Presbytis entellus</i>	Tibet, India, Nepal, Sri Lanka, Pakistan, Kashmir, Sikkim, Bangladesh
Langur	<i>Presbytis pileatus</i>	Assam, India, Burma
Siamang	<i>Symphalangus syndactylus</i>	Malay Peninsula, Sumatra
Scaly anteater	<i>Manis temmincki</i>	Africa
Beaver	<i>Castor fiber birulaia</i>	Mongolia
Australian native mouse	<i>Zyomys pedunculatus</i>	Australia
Australian native mouse	<i>Notomys aquilo</i>	Australia
Spotted linsang	<i>Prionodon pardicolor</i>	Nepal, Assam, Burma, Indochina
Brown bear	<i>Ursus arctos pruinosus</i>	Tibet
Brown bear (Italian population)	<i>Ursus arctos</i>	Italy
Long-tailed otter	<i>Lutra longicaudus</i>	South America
Flat-headed cat	<i>Felis planiceps</i>	Malay Peninsula, Borneo, Sumatra
Black-footed cat	<i>Felis nigripes</i>	Southern Africa
Costa Rican puma	<i>Felis concolor costaricensis</i>	Nicaragua, Costa Rica, Panama
Temminck's cat	<i>Felis temmincki</i>	Tibet, Sumatra
Leopard cat	<i>Felis bengalensis bengalensis</i>	Eastern Asia
Jaguarundi	<i>Felis yagouaroundi cacomitli</i>	Mexico
Jaguarundi	<i>Felis yagouaroundi fossata</i>	Mexico, Nicaragua
Jaguarundi	<i>Felis yagouaroundi panamensis</i>	Nicaragua, Costa Rica, Panama
Jaguarundi	<i>Felis yagouaroundi tolteca</i>	Mexico
Marbled cat	<i>Felis marmorata</i>	Nepal, Malaya, Burma, Sumatra, Borneo
Andean cat	<i>Felis jacobita</i>	Chile, Peru, Bolivia, Argentina
Bobcat	<i>Lynx rufus escuinapae</i>	Central Mexico
Babiroussa	<i>Babyrousa babyrousa</i>	Indonesia
Hog deer	<i>Axis porcinus annamiticus</i>	India, Thailand, Indochina
Philippine deer	<i>Axis calamianensis</i>	Calamian Islands (in Philippines)
Saiga antelope	<i>Saiga tatarica mongolica</i>	Mongolia
Goral	<i>Naemorhedus goral</i>	East Asia
Chamois	<i>Rupicapra rupicapra ornata</i>	Italy
Urival	<i>Ovis orientalis ophion</i>	Cyprus
Argali	<i>Ovis ammon hodgsoni</i>	Tibet
Shapo	<i>Ovis vignei</i>	Kashmir
Lechwe	<i>Kobus leche</i>	Zambia and Angola to Zaire
Bontebok	<i>Damaliscus dorcas dorcas</i>	South Africa
Solitary tinamou	<i>Tinamus solitarius</i>	Brazil, Paraguay, Argentina
Harpy eagle	<i>Harpia harpyja</i>	Central America, northern South America
Greenland white-tailed eagle	<i>Haliaeetus albicilla groenlandicus</i>	Greenland and adjacent islands
Black-fronted piping guan	<i>Pipile jacutinga</i>	Argentina
Montezuma quail	<i>Cyrtonyx montezumae merriami</i>	Mexico
Nordmann's greenshank	<i>Tringa guttifer</i>	Eastern Asia
Relict gull	<i>Larus relictus</i>	USSR, Mongolia, China, Vietnam
Mindoro zone-tailed imperial pigeon	<i>Ducula mindorensis</i>	Philippines
Red spectacted parrot	<i>Amazona pretrei</i>	Brazil, Argentina
Bahama parrot	<i>Amazona leucocephala</i>	Western Atlantic Ocean: Bahamas
Vinaceous breasted parrot	<i>Amazona vinacea</i>	Brazil, Paraguay, Argentina
Red-capped parrot	<i>Pionopsitta pileata</i>	Brazil, Paraguay, Argentina
Golden parakeet	<i>Aratinga guaruba</i>	Brazil
Helmeted hornbill	<i>Rhinoplax vigil</i>	Burma, Thailand, Malaysia, Borneo, Sumatra
Koch's pitta	<i>Pitta kochi</i>	Philippines
Japanese giant salamander	<i>Andrias davidianus japonicus</i>	Hanshu and Kyushu islands (Japan)
Chinese giant salamander	<i>Andrias davidianus davidianus</i>	Western China
Cameroon toad	<i>Bufo superciliaris</i>	Equatorial Africa
African viviparous toads	<i>Nectophrynoides ssp.</i>	Equatorial Africa
Panamanian golden frog	<i>Atelopus varius zeteki</i>	Panama
Spotted pond turtle	<i>Geoclemmys hamiltonii</i>	Northern India, Pakistan
Three-keeled Asian turtle	<i>Geomydas tricarinata</i>	Central India to Bangladesh, Burma
Indian sawback turtle	<i>Kachuga tecta tecta</i>	India
Burmese peacock turtle	<i>Morenia ocellata</i>	Southern Burma
Indian flap shell tortoise	<i>Lissemys punctata punctata</i>	India, Pakistan, Bangladesh
Indian soft shell turtle	<i>Trionyx galieticus</i>	Pakistan, India, Nepal, Bangladesh
Peacock soft shell turtle	<i>Trionyx hurum</i>	India, Bangladesh
Yellow monitor	<i>Varanus flavescens</i>	Pakistan through India to Bangladesh
Bengal monitor	<i>Varanus bengalensis</i>	Iran east through Southeast Asia
Desert monitor	<i>Varanus griseus</i>	North Africa, Middle East to USSR, India, Pakistan
Indian python	<i>Python molurus molurus</i>	Sri Lanka, India

ENDANGERED SPECIES SCIENTIFIC AUTHORITY

Notices—May 1978

The Endangered Species Scientific Authority (ESSA) is responsible for the biological review of applications to import or export species listed in Appendix I, and to export species listed in Appendix II, of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Notices of the ESSA's findings are published in the Federal Register. Summaries of these notices are reported in the BULLETIN by month of publication.

Guidelines, Information Needs Set for 78-79 Quotas

The ESSA has issued its guidelines and information requirements for determinations on 1978-79 export of four species listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (F.R. 4/10/78).

The four species are the bobcat (*Lynx rufus*, excluding the Mexican bobcat, *L. r. escuinapae*), river otter (*Lutra canadensis*), lynx (*Lynx canadensis*), and American ginseng (*Panax quinquefolius*), all of which are also being considered for possible Endangered or Threatened status under the Endangered Species Act of 1973.

Responsible for determining whether or not export would be detrimental to the four species, the ESSA is seeking information within the context of its guidelines to help prepare its findings on a state-by-state basis and present them in the form of a proposed rule-making (scheduled for July) to be followed by a final ruling (September).

All comments should be submitted to the Executive Secretary, Endangered Species Scientific Authority, 18th and C Streets, NW., Washington, D.C. 20240.

The ESSA guidelines and information requirements are outlined below. Full details are given in the *Federal Register* notice, which may be obtained by writing directly to the ESSA.

Guidelines

The ESSA recognizes that harvest may be directly related to export, but acknowledges that the precise relationship for the four species, especially the bobcat, is not well known. A general assessment of the situation suggests that nearly all lynx and river otter pelts and ginseng roots harvested are subsequently exported, but the estimate for bobcat pelts ranges between 50 and 90 percent.

In addition, there is uncertainty as to the repercussions of restricting exports. That is, it is not known to what extent the domestic market would be able to absorb additional pelts and roots previously intended for sale abroad. There are indications, though, that reduced exports would result in reduced harvests. Any more specific conclusion, the ESSA says, is probably unwarranted. Given that conclusion, though, the ESSA recognizes that it must take into account the impact of harvesting on a state-by-state basis.

The ESSA acknowledges that harvest should not depress these species below their optimum sustainable population (OSP) levels. However, there is uncertainty as to exactly what these levels are for the four species.

As an alternative approach, the ESSA may rely to some extent on analysis of population age structure among the individual species. Given several assumptions, this approach is likely to indicate population trends—that is, whether a population is decreasing, increasing, or stable. Such trends can then be related to harvest data. This technique would be useful if applied on an annual basis, and especially if it can be coordinated with habitat evaluation and a comparison of current density with density at carrying capacity.

Meanwhile, as an interim alternative to use of this method, the ESSA may rely primarily on past reported harvest data.

For populations of bobcat, lynx, and river otter in some states, available biological data may allow the ESSA to determine that export is permissible under the guidelines indicated above. Where there is insufficient biological information available to make such a determination, the ESSA will take into consideration the management practices and initiatives being used to ensure conservation of these species.

These include controlled harvesting, with methods and seasons being set by the state; registration and marking of all pelts; and determination of harvest level objectives annually by each state.

In particular, the ESSA emphasizes that establishment of comprehensive state management programs incorporating these principles—as has already been done by some states—would greatly benefit the ESSA's own planning and review activities. Accordingly, the ESSA recommends that all states already having such programs in effect submit their annual reports directly to the ESSA.

Information Needs

For the bobcat, lynx, and river otter, the ESSA is seeking information on population estimates, indices, and trends; habitat conditions; harvest methods, practices, and data—past and present; and management activities, including state regulations and current harvest level objectives.

For the American ginseng, the ESSA requests details concerning present and past abundance, range, and distribution; life history, including reproductive biology; and information on state harvest practices and regulations.

Status Review

Rhesus Macaque In Bangladesh

The Service has announced that it will review the status of the Rhesus macaque (*Macaca mulatta*) in Bangladesh to determine whether or not this population should be listed as Endangered or Threatened (F.R. 4/13/78).

The decision to undertake this review was based primarily on a petition submitted in September 1977 by Ken Green of the National Zoological Park, Washington, D.C. Having collected data in Bangladesh over a 5-month period in 1976, Green presented substantial evidence to support his contention that the Bangladesh population of Rhesus macaque should be listed as Endangered.

According to Green, who forwarded his evidence to the Service in the form of a report on the primates of Bangladesh, forest destruction and land clearing represent the chief threats to the species. Furthermore, significant numbers of Rhesus macaques have been exported to the United States despite a prohibition on the export of Bangladesh's endemic primates.

All comments on this subject should reach the Service by June 13, 1978.

Rio Grande Fishes Recovery Team Named

The Service has appointed a Rio Grande Fishes Recovery Team, headed by Dr. Clark Hubbs of the University of Texas.

The other team members are Dr. Anthony Echelle of Baylor University, Dr. Salvador Contreras-Balderas of Universidad Autonoma de Nuevo Leon, Mexico, Michael Hatch of New Mexico State University, and Buddy Jensen of the Service's Dexter National Fish Hatchery.

The team is responsible for the Endangered Clear Creek gambusia, Pecos gambusia, and Comanche Springs pupfish. It is the second team named to cover a river drainage system.

Pending Rulemakings

The Service expects to issue rulemakings and notices of review on the subjects listed below during the next 90 days. The status or action being considered for each final and proposed rulemaking is given in parentheses.

The decision on each final rulemaking will depend upon completion of the analysis of comments received and/or new data made available, with the understanding that such analysis may result in modification of the content or timing of the original proposal, or the rendering of a negative decision.

Pending Final Rulemakings

- 6 butterflies (C.H.)
- Grizzly bear (C.H.)
- 15 crustaceans (E, T)
- Whooping crane (C.H.)
- Black toad (T, C.H.)
- New Mexican ridge-nosed rattlesnake (T, C.H.)
- 2 zebras (E)
- 7 Eastern land snails (E, T)
- 12 Western snails (T)
- African elephant (T)
- 2 big-eared bats (E)
- 3 Ash Meadow plants (E)
- 5 plants (E)
- 6 San Francisco Bay Area plants (E, T)

Pending Proposed Rulemakings

- 10 North American beetles (E, T)
- 2 harvestmen (E, T)
- 3 mussels (C.H.)
- Rocky Mountain peregrine falcon population (C.H.)
- Colorado squawfish (C.H.)
- Virgin River chub (E, C.H.)
- 2 Hawaiian cave invertebrates (E, T)
- Desert tortoise (Beaver Dam slope population) (E, C.H.)
- Deregulation of Tecopa pupfish

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	33	227	260	3	17	20
Birds	68	144	212	3		3
Reptiles	10	46	56	6		6
Amphibians	5	9	14	2		2
Fishes	29	10	39	12		12
Snails		1	1			
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	15		15	2		2
Total	190	439	629	30	17	47

Number of species currently proposed: 132 animals
1,854 (approx.)

Number of Critical Habitats proposed: 39

Number of Critical Habitats listed: 27

Number of Recovery Teams appointed: 59

Number of Recovery Plans approved: 16

Number of Cooperative Agreements signed with States: 21

April 30, 1978

- Unarmored threespined stickleback (C.H.)
- Puerto Rican whip-poor-will (C.H.)
- Laysan duck (C.H.)
- Whip-scorpion (E, C.H.)
- Valdina Farms salamander and isopod (E, C.H.)
- Blunt-nosed shiner (E)
- 10 butterflies and moths (E, T, C.H.)
- 2 plants (E) and 6 plants (C.H.)
- San Marcos Spring fish and salamander (E, T, C.H.)
- West African manatee (T)
- 20 Appendix I spp.
- Cui-ui (C.H.)
- Whooping crane (C.H.—additional areas)
- Illinois mud turtle (E, C.H.)

- Key mud turtle (E, C.H.)
- Plymouth red-bellied turtle (E, C.H.)
- 7 Oregon freshwater fishes (E, T, C.H.)
- Light-footed clapper rail and California least tern (C.H.)
- Yellow-shouldered blackbird (C.H.)
- Santa Cruz long-toed salamander (C.H.)
- Hawksbill sea turtle (C.H.)
- 2 Virginia fishes (T, C.H.)
- Maryland darter (C.H.)
- 4 Texas/New Mexico fishes (E, T, C.H.)

Pending Notice of Review

- Desert tortoise

Abbreviations: E=Endangered, T=Threatened,
C.H.=Critical Habitat



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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Supreme Court Rules In Favor Of Snail Darter

The U.S. Supreme Court, in a 6 to 3 decision, has prohibited the Tennessee Valley Authority from closing its nearly completed Tellico Dam, thereby preserving the Critical Habitat of the Endangered snail darter (*Percina tanasi*).

In the landmark decision handed down June 15, the majority opinion written by Chief Justice Warren E. Burger held that the language of Section 7 of the Endangered Species Act of 1973 "is plain and makes no exception" for such projects as Tellico, that were underway when Congress passed the 1973 law.

"It is clear from the Act's legislative history that Congress intended to halt and reverse the trend towards species extinction—whatever the cost," Burger said. "The pointed omission of the type of qualified language previously included in endangered species legislation reveals a conscious congressional design to give endangered species priority over the 'primary missions' of Federal agencies. Congress, moreover, foresaw that Section 7 would on occasion require agencies to alter ongoing projects in order to fulfill the act's goals."

The decision upheld a U.S. Sixth District Court of Appeals ruling on January 31, 1977, enjoining TVA from closing the \$110 million dam in a suit brought by a group of environmentalists (Hiram G. Hill, Jr. et al). TVA had sought a reversal of this ruling, arguing that Tellico was not bound by Section 7 restrictions by virtue of the fact that it was started six years before the act's passage, and was approximately 75 percent completed when the snail

(continued on page 3)

African Elephant Listed as Threatened; Special Rules to Allow Some Ivory Imports

The Service has taken final action to list the African elephant (*Loxodonta africana*) as Threatened, and has issued special rules for imports of ivory into the United States (F.R. 5/12/78).

Under the rulemaking, effective June 11, the Service adopted a course for controlling ivory importation that places the burden for ensuring that exports to the United States were legally acquired—and not detrimental to the survival of the species—on the member nations of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

The special rules state the importation of African elephants and their parts or products will be permitted only under the following provisions:

- The specimens or materials involved must have originated in the wild from a country that is party to the Convention.
- Any case involving exportation or reexportation must be in compliance

with article IV of the Convention and have remained in customs control in an unaltered condition while in transit to the United States through non-Convention nations.

• Special-purpose permits may be issued authorizing any activity otherwise prohibited with regard to the African elephant upon submission of proof that such wildlife was already in the United States on the effective date of this rulemaking, or was imported in accordance with the above provisions.

These rules are a modification of Option 2 set forth in the Service's proposal last January 16 to list the African elephant as Threatened (see the January 1978 BULLETIN). The original Option 2 would have allowed imports from Convention nations even if the item originated in a non-Convention country, and would not have required issuance of special-purpose permits for interstate commerce.

(continued on page 10)

Florida Jetport Receives ES Clearance

A biological opinion has been issued by the Service stating that the proposed operation of the Florida Replacement Jetport training facility in Dade County is "not likely" to jeopardize the continued existence of the Florida Everglade kite (*Rostrhamus sociabilis plumbeus*), and suggesting that the Federal Aviation Administration (FAA) carry out certain safeguards to insure continued protection of this Endangered species.

The opinion was rendered May 31 following formal section 7 consultation with FAA on the potential impact of the

(continued on page 11)



Male Everglade kite at Florida's Loxahatchee NWR

U.S. Fish and Wildlife photo by Luther Goldman

Regional Briefs

Endangered Species Program regional staffs have reported the following summary of recent activities in their areas:

Region 1. The Oregon Rare Plant Task Force has received a contract to prepare status reports on Oregon plants. This is a cooperative project financed by the Bureau of Indian Affairs, the Bureau of Land Management, the Heritage Conservation and Recreation Service, the Environmental Protection Agency, the Fish and Wildlife Service, the Forest Service, the Army Corps of Engineers, and the Soil Conservation Service.

Two populations of the Warner sucker (*Catostomus warnerensis*)—a species thought to be extinct—have been discovered in Oregon's Honey Creek system. One population was found in a stream, and the other in a lake. A proposed Endangered status and Critical Habitat rulemaking is being prepared for the fish.

Thirty red wolf pups (*Canis rufus*) were born (7 litters) in May at the Point Defiance Zoological Park, which is located in Tacoma, Washington.

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Virginia Citizens Honored For Saving Round-Leaf Birch

The Fish and Wildlife Service presented its Citizen's Award to Ray Haulsee (holding certificate at left center) and Garland Ross, both of Sugar Grove, Virginia, for protecting recently rediscovered specimens of the Endangered Virginia round-leaf birch on their property. Both men decided to erect fences around the trees at their own expense to keep away vandals and plant collectors and to preclude grazing by cows. The trees were discovered by Douglas W. Ogle (at far left), a professor at Virginia Highlands Community College. Peter Mazzeo (standing next to Ogle), a botanist at the National Arboretum in Washington, D.C., provided historical information that helped lead to Ogle's find in 1975. The presentation was made May 5 by Howard Larsen (far right), the Service's Boston regional director.

Region 2. A survey of nesting bald eagles (*Haliaeetus leucocephalus*) in central Arizona has recorded a total of 10 occupied territories, an increase of one over last year. Five of eight oc-

cupied nests produced a total of 10 hatchlings (two per nest). One of the successful nests was discovered this year.

Region 5. A Service consultation team has been established for the Army Corps of Engineers Dickey-Lincoln Dam project in northern Maine. The team will prepare a report for biological opinion on the project's effect upon the Furbish lousewort (*Pedicularis furbishiae*). Research has begun to determine if the plant can be artificially propagated. If proven feasible, large numbers of plants can be cultivated and reintroduced into the wild.

Region 6. Coordination meetings have been held at Denver, Colorado, and Billings, Montana, to discuss the potential effects of the Northern Border Gas Pipeline. The project's impact on Endangered species appears to be minimal.

Potter Heads Houston Toad Recovery Team

The Service has appointed a recovery team for the Houston toad, headed by Floyd E. Potter, Jr., of the Texas Parks and Wildlife Department, to develop a plan for the recovery of this Endangered species.

The other members are Dr. Lauren E. Brown of Illinois State University, Dr. Howard W. Campbell of the Service's National Fish and Wildlife Laboratory, Dr. William L. McClure of the Texas Highway Department, and Dr. Robert A. Thomas of Louisiana State University.

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darter was discovered in a portion of the Little Tennessee River to be flooded by the dam.

No Committee 'Repeal'

In addition, Attorney General Griffin B. Bell had contended in his debut before the Supreme Court April 18 on behalf of TVA that Congress had sanctioned the dam's completion when it appropriated funds for the project in 1975, 1976, and 1977. He cited House and Senate Appropriations Committee reports saying the project should proceed.

But Burger rejected this argument, asserting that "nothing in the TVA appropriations measures passed by Congress stated that the Tellico Project

was to be completed regardless of the act's requirements. To find a repeal under these circumstances . . . would violate the 'cardinal rule . . . that repeals by implication are not favored'."

Dissenting Views

Justice Lewis F. Powell, Jr., in a dissenting opinion, said the court should view the act "reasonably" and shape a remedy that "accords with some modicum of common sense and the public weal." He argued that the meaning of "actions" in Section 7 was far from plain and that "it seems evident that the 'actions' referred to are not all actions that an agency can ever take, but rather actions that the agency is

deciding whether to authorize, fund or carry out."

Powell was joined in the dissent by Justice Harry A. Blackmun. Justice William H. Rehnquist dissented separately.

Zygmunt J. B. Plater of Wayne State University Law School, who argued the case for the environmentalists, said he was delighted by the decision. He said the Supreme Court had made clear "what we've been trying to show all along: this is not a 'little fish vs. big dam' case. It is a question of whether a federal agency must obey federal law, because if TVA had complied with the law's conflict-resolution procedures back in 1973, we would never have had to go to court in the first place."

FWS Speeds Intra-Service Section 7 Consultations

All divisions within the Fish and Wildlife Service are now reviewing their programs and activities in accordance with intra-Service consultation procedures to ensure their compliance with Section 7 of the Endangered Species Act of 1973.

The procedures, established on February 8—a month after the publication of final section 7 regulations (F.R. 1/4/78)—specify criteria to determine when intra-Service consultation is required with Endangered Species Program personnel. (Under Section 7 of the act, all Federal agencies are required to consult the Fish and Wildlife Service when activities they fund, authorize, or carry out may affect listed species or their habitats.)

Requests for consultation are processed by ES Program staff of both the Washington and regional offices along with consultation requests from other Federal agencies. However, according to Service policy, once it is determined that a proposed Service action "may affect" a listed species, formal consultation must be handled at the directorate level.

Service operations primarily affected by Section 7 requirements include refuges, animal damage control, law enforcement, contract issuance, research, Federal aid to states, ecological services, and permit issuance.

Review Criteria

Under the procedures, the Service has established four criteria on which to screen its program activities following inquiries on the need for consultation. They are as follows:

1. *Will not affect:* Consultation is not required, although verbal confirmation may be obtained from the Endangered Species Program manager.

2. *Definite beneficial effect:* Formal consultation is required from the Director of the program if the action/ac-

tivity contributes to the conservation of listed species or their Critical Habitats.

3. *Definite adverse effect:* Action/activity must be abandoned or modified sufficiently to eliminate the adverse effect on listed species or their Critical Habitats. (If this is not possible, consultation is required.)

4. *May effect:* Formal consultation is required with the Director concerning actions/activities that may affect a listed species or its Critical Habitat either adversely or beneficially.

Consultation requests generally are submitted with an evaluation form prepared by the originating region or project manager, although in some cases they may be handled by telephone.

Examples of Requests

Typical of the dozens of requests that have originated under the Service's research program was one from the Virginia Cooperative Fishery Research Unit, which involved a project to survey the distribution of Endangered clam populations in the Powell, Clinch, and Holston Rivers of Virginia's Cumberland Plateau region. The study required samples of clams to be taken by scuba diving or wading riffles, weighing and measuring them, and then returning them to their habitat—actions that carried a "may effect" evaluation.

Consultations have been completed for activities such as studies of bald eagle feeding patterns, Hawaiian forest bird surveys, a search for the eastern cougar that will include photography, and grizzly bear behavior under various kinds of bear-man encounters.

Management of the numerous National Wildlife Refuges (NWR's) that contain listed species is also generating consultation requests. For example, the Anahuac NWR on Texas' Galveston Bay sought consultation on the con-

struction of a canal that may have affected the red wolf and alligator populations in the area.

The Federal Wildlife Permit Office is requesting consultation on virtually all permit requests involving listed species. Recently, the Service issued a "blanket" biological opinion following a request for "aggregate section 7 consultation" on the issuance of permits authorizing interstate commerce in captive, self-sustaining populations (CSSP's). (All of the permits reviewed concerned listed pheasants. Interstate commerce in lemurs, tigers, jaguars, or leopards—also CSSP's—would have to be addressed, therefore, in a separate consultation.)

All new applications for Federal Endangered species grant-in-aid assistance, as well as requests for amendments to ongoing Federal assistance programs, will also involve consultation before approval can be given by the Director.

Even contract proposals affecting listed species must be approved following consultation before final award.

"We're making every effort to ensure that we comply with the full intent and spirit of section 7 in furthering the purposes of the act," says Robert Jacobsen, chief of the Office of Endangered Species' Branch of Management Operations, which oversees Service consultations.

To promote handling of Service requests as promptly as possible, the program has established a self-imposed two-day maximum in rendering opinions on whether activities that may effect Endangered or Threatened species should proceed as scheduled or be modified.

The Service also plans to hire more than 70 section 7 specialists over the next few months to meet its obligations in the consultation process.

Black-footed Ferret, Peregrine Head New Mexico's Agenda of Endangered Species Projects

New Mexico
Department of
Game & Fish

New Mexico's Endangered Species Program is preparing to join the hunt for the elusive black-footed ferret (*Mustela nigripes*), one of the Nation's rarest Endangered mammals.

The State is contracting with a private firm for the training of two dogs that would be able to work large prairie dog towns to sniff out ferrets. The dogs would be expected to discriminate between the scents of black-footed ferrets and similar animals and to signal the presence of a ferret to the dog handler.

John P. Hubbard, supervisor of the program for the New Mexico Department of Game and Fish, believes the training project will prove extremely worthwhile if successful. "Up to now," he says, "we have had to rely on primitive methods to locate ferrets." (There have been no recent confirmed black-footed ferret sightings in the State. The animal is often confused with the long-tailed weasel, which has a face mask somewhat similar to the ferret's.)

The dogs would be used especially to search prairie dog towns targeted for destruction or poison control. If any ferrets are found in these areas, Hubbard says, it is hoped they can be re-established in other locations.

Federal Aid Projects

New Mexico signed a cooperative agreement with the Fish and Wildlife Service in 1977, becoming eligible to receive Federal grant-in-aid matching funds for endangered species conservation in the State. The ferret dog-training project, expected to cost about \$20,000, may soon receive Service ap-

proval for grant-in-aid assistance.

Currently, New Mexico is involved in a joint project with Colorado to augment the production of peregrine falcon (*Falco peregrinus anatum*) eyries. The New Mexico portion of this project is costing \$13,300, with 75 percent paid by Federal grant. (The States will exchange data on their peregrine studies and work together in implementing the recovery plan for the Rocky Mountain-Southwest population of this species.)

Under authorization of the State's Wildlife Conservation Act, passed in 1974, New Mexico lists 104 species of animals as endangered, including 12 on the Federal list of Endangered and Threatened species. In addition to the ferret and peregrine falcon, the federally listed species include the Mexican wolf (*Canis lupus baileyi*), jaguar (*Felis onca arizonensis*), bald eagle (*Haliaeetus leucocephalus*), whooping crane (*Grus americana*), Mexican duck (*Anas platyrhynchos diazi*), Gila trout (*Salmo gillae*), Colorado River squawfish (*Ptychocheilus lucius*), Pecos gambusia (*Gambusia nobilis*), Gila topminnow (*Poeciliopsis occidentalis occidentalis*), and the recently listed Socorro isopod (*Exosphaeroma thermophilum*).

State ES Program

For fiscal year 1978, the New Mexico Endangered Species Program is budgeted at \$125,000, about 40 percent of which comes out of the State's general fund revenues. It is the only wildlife program of the State Game and Fish Department that is supported out of the general fund; others receive the bulk of their funding from the sale of

hunting and fishing licenses and from other Federal grant-in-aid programs.

The State Endangered Species Program employs four full-time biologists, including Hubbard, and is geared to perform basic research, surveys, and management activities on listed as well as potentially endangered species. It also funds contractual or intern studies for work on both State and federally listed species. Under the State's present law, endangered species protection is limited to mammals, birds, reptiles, amphibians, fish, mollusks, and crustaceans. Plants are not included.

'Geopolitical' Concept

New Mexico is one of the larger states, encompassing 121,666 square miles of terrain and habitats ranging from desert scrub to alpine tundra. The land supports a diverse biota of some 140 mammal species, 435 birds, 80 reptiles, 22 amphibians, 59 fish, and countless invertebrates.

"We see our major objective as one of preserving the biological diversity of New Mexico, with our program designed to aid those species that are most likely to be lost in the near future," Hubbard says.

"Our enabling legislation charges us with treating as endangered those species whose prospects of survival or recruitment in New Mexico are either now in jeopardy or are likely to be so in the near future. From this definition one can see that under our law, 'endangered' is gauged on a geopolitical rather than an overall concept of the range of species. We find this a very acceptable concept, because we believe that each state should concern itself primarily with conserving the wildlife within its domain."

Under this concept, he adds, it is also possible for New Mexico to play a very strong role in protecting its resident species even without the additional protection of Federal listing action.

Falcon Projects

The program's philosophy may be viewed in its approach to management of the peregrine falcon. Hubbard says the major threat to the bird in New Mexico appears to be chlorinated hydrocarbons, which cause eggshell thinning, but that the source of contamination has not been verified. Ground contamination by DDT and similar chemicals appears to be low in New Mexico, and he believes a more serious source may be contaminated prey taken by



White-sided jackrabbit (*Lepus callotis gaillardii*) is found in the Animas Valley of southwestern New Mexico. Classed as endangered by the State, the 1976 population of the species was estimated at 220 to 460. It appears to be an entirely nocturnal creature.

falcons wintering in Latin America. (Other minor and/or potential threats include habitat alteration, harassment, and falconry.)

Hubbard feels there is a great deal to be learned about the bird's population trends in the State, its levels of productivity, and threats to its continued existence before the department can initiate the best possible management program to boost the bird's recovery. Accordingly, he believes the State should take into account the practical limits of the program. "For example," Hubbard says, "if the encroachment of chlorinated hydrocarbons into the prey base of New Mexico peregrines should continue to rise, is there any realistic hope of reversing this? If contamination is largely from Latin America, is it realistic to expect that those countries would curtail their use of such chemicals—especially in time to benefit the peregrine?"

Until needed studies are completed and problems are identified, including apparent reproductive failures and population declines, Hubbard favors a pragmatic approach to the management of the peregrine falcon in New Mexico—beginning in late 1978.

In line with this philosophy, Hubbard is opposed to any introduction of exotic subspecies of peregrines into New Mexico to replace *anatum*, should it become extirpated. He fears an exotic subspecies might move into the traditional niche of the North American prairie falcon (*Falco mexicanus*) or some other species, which would affect the existing diversity of endemic biota in the State.

Under its current peregrine production augmentation project, the State plans to work with three eyries. Eggs are to be pulled and replaced with dummies (or, if timing is right, not replaced at all to induce laying of a second clutch), the eggs then shipped to the Cornell University Peregrine Fund Project for incubation, and the young peregrines returned to the eyries to be raised by adult birds. Thus far, eggs have been removed from all three eyries and replaced temporarily by either dummies or young prairie falcons, these to be replaced subsequently by the young peregrines. (The use of young prairie falcons is both to test the acceptance of chicks by the parent peregrines, and to provide substitutes until suitable young peregrines are available.)

Mexican Duck

Hubbard led a study reexamining the status of the Mexican duck that resulted in the delisting of the species by New Mexico. The Service proposed Federal deregulation of the species on March 31, 1978 (see the April 1978 BULLETIN).

Chihuahua Chub

Another species of current concern to the program is the Chihuahua chub (*Gila nigrescens*), also known as the Mimbres chub, a fish species that is listed as endangered by the State. Only about three dozen of these fish, which grow up to a foot long, remain in New Mexico and the United States. The chub's range apparently never was as widespread in the United States as in Mexico, and it is disjunct now because the streams it once inhabited are no

longer connected.

ES Handbook

The program has recently compiled a "Handbook of Species Endangered in New Mexico," which describes the status of all the 104 species protected by the State. The publication is intended for use by biologists and is available for \$5.00 from the New Mexico Department of Game and Fish, Game Management Division, Villagra Building, Santa Fe, New Mexico 87503.



A Chihuahua chub

N.M. Department of Game & Fish photo

State Report

Illinois Gears Up For Federal ES Projects

An Endangered species cooperative agreement is nearing the signing stage between the Illinois Department of Conservation and the U.S. Fish and Wildlife Service.

When completed, the agreement is expected to lead to a series of federally-aided projects involving both State-listed and federally-listed species. Illinois has developed a list of 72 endangered and threatened species in the State, including four on the Federal list that are of primary concern—the gray bat (*Myotis grisescens*), Indiana bat (*M. sodalis*), peregrine falcon (*Falco peregrinus anatum*), and bald eagle (*Haliaeetus leucocephalus*).

The Illinois Endangered Species Board, which operates the program, hopes to become party to a multi-state cooperative study of the Indiana bat after the agreement is signed, along with Missouri and Iowa. Research projects also are planned for the Illinois mud turtle (*Kinosternon flavescens spooneri*), a candidate for Federal protection. Status and habitat surveys are being considered for the Mississippi kite (*Ictinia mississippiensis*) and Swainson's warbler (*Limnethlypis swainsonii*).

Eagle Habitat Purchase

In 1976, as part of the State's bicentennial celebration, public school students contributed \$55,000—\$18,000 of which was used for the purchase of 60 acres of land in Hancock County, and \$37,000 of which was given to the Na-

tional Wildlife Federation toward the acquisition of nearly 300 acres along the Mississippi River in Rock Island County for bald eagle refuges. Although there has been no record of eagles nesting in Illinois for the last 30 years, two eagle nests were found in the northern tip of the State last year. Unfortunately, neither was productive.

Final negotiations are now underway for purchase of the land (at an estimated cost of nearly \$250,000), which lies just south of the two nesting sites. It is hoped that establishment of the reserves will help promote the eagle's return to successful reproduction in Illinois.

State ES Law

The Illinois Legislature passed an Endangered Species Protection Act in 1972. This law was revised in 1977 to bring it into accord with the Federal Endangered Species Act of 1973, also making the State eligible for grant-in-aid funding.

Earlier this year, Carl Becker was named State Endangered Species Program coordinator. The program's budget, funded out of general State tax revenue and administered by the Department of Conservation, is \$32,000 for Fiscal Year 1978 and anticipated at \$40,000 for FY 1979.

Illinois is now compiling a proposed list of endangered and threatened plants which, following public hearings, may receive protection under Illinois' 1977 law.

9 Areas Designated Whooping Crane Critical Habitat

A series of nine refuges and migratory stopover areas used by the two populations of the Endangered whooping crane (*Grus americana*) have been designated as Critical Habitat in a final rulemaking issued by the Service (F.R. 5/15/78).

Critical Habitats for the whooper population of about 70 birds that summers at Canada's Wood Buffalo National Park are as follows:

- Platte River bottoms between Lexington and Dehman, Nebraska
- Cheyenne Bottoms State Waterfowl Management Area, Kansas
- Quivera National Wildlife Refuge (NWR), Kansas
- Salt Plains NWR, Oklahoma
- Arkansas NWR and vicinity, Texas, where the population winters

Critical Habitats for the flock of six whoopers* that has been established at Grays Lake NWR in Idaho include the following:

- Grays Lake NWR
- Monte Vista NWR, Colorado
- Alamosa NWR, Colorado

*There are currently 2 young whooper chicks at Grays Lake in addition to the subadult birds.

- Bosque del Apache NWR, New Mexico, where the flock winters

The rule, which becomes effective June 14, was first proposed on December 16, 1975, along with Critical Habitat for five other Endangered species. The final rule follows the original proposal except for the Platte River zone in Nebraska, which has been reduced considerably on the basis of data provided by the Nebraska Game and Parks Commission. The Service also has refined the boundaries of the Arkansas NWR zone on the basis of advice from the Whooping Crane Recovery Team.

Comments on the Proposal

The most comments (28 letters) were received about the Platte River zone, including several expressing concern about the intervention of the Federal Government in private and local government affairs. Most of the opposition appeared to be based on an erroneous belief that a Critical Habitat designation would be akin to establishing a wilderness area or refuge that would not be available for human uses.

(However, under section 7 of the Endangered Species Act, only Federal



Whooping crane Critical Habitats are situated along migratory flyways

agencies are required to ensure that any actions they fund, authorize, or carry out do not jeopardize a listed species or destroy or modify its Critical Habitat.)

The decision to narrow the original Platte River zone was based upon a Nebraska Game and Parks Commission suggestion that only the Platte River channel and immediately adjacent wetlands and all rainwater basins of type III and IV wetlands and their associated watersheds be included. In agreeing to this, the Service said the remaining area in the original zone would be excluded until inclusion on the basis of biological data is warranted.

The Kansas Forestry, Fish, and Game Commission opposed a Critical

Habitat designation for the Cheyenne Bottoms zones, contending that sufficient protection already was being afforded the whooper in the State. Requests were received in 1976 to defer a determination on the Colorado and New Mexico zones because sufficient data were lacking on whooping crane requirements in those areas. The Service said the final Critical Habitats have been determined on data acquired more recently (through April 1978).

Delineation of the zones in Idaho, Colorado, and New Mexico will allow for a hoped-for increase in the Grays Lake flock. The Service said additional Critical Habitat sites may be proposed as more precise information becomes available.

FWS Proposes 13 Changes In Convention Appendices

The Service's preliminary findings in a survey of Appendices I and II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora are that a total of 13 changes should be made in the 134 listings of species and subspecies native to the United States (F.R. 5/3/78).

The survey is being undertaken to determine whether or not the United States should propose amendments to the Appendix listings pursuant to the agreement reached by the Convention parties at a special working session in Geneva, Switzerland, in October 1977. The parties agreed to conduct such surveys and submit all amendment proposals by August 15, 1978, so that they could be considered at the next Convention meeting, to be held in San Jose, Costa Rica, on March 19-31, 1979.

Publication of the Service's preliminary findings is intended to elicit public assistance in determining the final form of any U.S. amendment proposal. All information and other comments should be submitted to the Service by July 3. Following analysis of these responses and any other data made available, the Service will proceed to issue a proposed rulemaking simultaneously with transmittal of the U.S. proposal to the Convention Secretariat. Following consideration of all recommended changes by the United States and other parties to the Convention in Costa Rica, amendments to the Appendices will be announced in the *Federal Register* as a final rulemaking.

The full list of all 134 species and subspecies is available in the May 3 issue of the *Federal Register*. The 13 proposed changes—which the Service emphasizes are preliminary findings that may be modified in light of significant new information—are summarized below:

Southern sea otter (*Enhydra Lustris nereis*): Delete from Appendix I because it has recovered in abundance and is protected from trade by Federal and state law, but add to Appendix II because of its similarity of appearance, when processed as pelts, to the northern sea otter.

Northern elephant seal (*Mirounga angustirostris*): Delete from Appendix I because it has made a strong recovery in recent years, it is completely protected under Federal law, and it

does not appear to be a likely candidate for trade.

West Indian monk seal (*Monachus schauinslandi*): Delete from Appendix I because no living specimens have been found in recent years and the species is most likely extinct.

Mexican duck (*Anas platyrhynchos diazi*): Delete from Appendix I. This duck, recently reclassified as a subspecies of mallard, has been proposed by the Service for removal from the U.S. List of Endangered and Threatened Wildlife and Plants (see April 1978 BULLETIN).

Bald eagle (*Haliaeetus leucocephalus*): Retain on Appendix I but also add to Appendix II. Although bald eagle populations in Alaska and Canada cannot be considered to be in danger of extinction, those in the 48 conterminous states are sufficiently reduced in abundance to warrant inclusion in both Appendices.

American kestrel (*Falco sparverius*): Delete from Appendix II primarily because the bird has recovered to the point where it is widespread throughout North and South America.

Greater prairie chicken (*Tympanuchus cupido pinnatus*): Delete from Appendix II because it has recovered sufficiently so that it may now be taken legally by hunters in certain areas.

American alligator (*Alligator mississippiensis*): Delete from Appendix I and add to Appendix II because it has increased its numbers greatly during the past decade.

American crocodile (*Crocodylus acutus*): Delete from Appendix II, add the U.S. population to Appendix I, and add all other populations to Appendix II. There are now only 200-400 known individuals of American crocodile in the United States, and there may be as few as 25 breeding females in this total. Therefore, the U.S. population must be seen as in danger of extinction.

Longjaw cisco (*Coregonus alpenae*): Delete from Appendix I because no living specimens have been seen since 1952; the species is probably extinct.

Blue pike (*Stizostedion vitreum glaucum*): Delete from Appendix I in that the fish is probably extinct.

Yellow-blossom pearly mussel (*Epiblasma* [= *Dysnomia*] *florentina curtisi*): Delete from Appendix I because it is probably extinct.

Sampson's pearly mussel (*Epiblasma* [= *Dysnomia*] *sampsoni*): Delete from Appendix I because it is probably extinct.

Considerable data on the status of several additional species have been received which, although not addressed in this preliminary notice, may also warrant changes in the Appendices. Any other recommended changes will be included in a proposed rulemaking, to be published in the *Federal Register*. Among the species for which additional information has been received are the lynx (*Lynx canadensis*), gray wolf (*Canis lupus*), river otter (*Lutra canadensis*), brown and grizzly bear (*Ursus arctos*), and Mearns's quail (*Cyrtonyx montezumae mearnsi*).

Status Review

Leopard, Lechwe

The Service has announced that it will review the status of the leopard (*Panthera pardus*) and the lechwe (*Kobus leche*) to determine whether they should be proposed for reclassification under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (F.R. 5/1/78).

The decision to undertake this review was based primarily on evidence presented in a January 1978 petition submitted by Safari Club International. This private organization believes that the leopard should be moved from Appendix I to Appendix II of the Convention. (Under Appendix II, a U.S. permit would no longer be required to import leopards or their parts or products. However, the exporting nation would still be required to certify that the export of the species would not be detrimental to its continued survival in the wild.) Safari Club International has recommended that the lechwe (an antelope native to Africa) be removed from the Appendices.

Comments on this review should be submitted to the Service's Federal Wildlife Permit Office by June 30, 1978.

(continued on next page)



Scientists Bruce Collette and Leslie Knapp seine for specimens of the Endangered Maryland darter in Gasheys Creek, Harford

County. Pollution, siltation, and a possible lowering of water levels pose threats to the fish's continued existence.

Maryland Darter

Portions of two streams in north-eastern Maryland have been proposed as Critical Habitat for the Maryland darter (*Etheostoma sellare*) in a ruling issued by the Service (F.R. 5/12/78).

The proposed areas consist of the lower portion of Deer Creek, a tributary of the lower Susquehanna River, and the main channel of Gasheys Creeks, which flows into Swan Creek just above its mouth on Chesapeake Bay.

Large gravel and cobbles on the beds of the creeks provide cover for the fish, and riffle and pool areas support aquatic insects and snails—the principal food of the darter.

Lying wholly within Harford County, these two areas represent the only presently known habitat for the species, which has been listed as Endangered since 1967.

The darter also has been reported from Swan Creek. Although several localities have been sampled, the precise location of any Swan Creek population is not currently known to the Service.

It is believed that the species had more widespread distribution in the past, but that local populations died out as a result of stream impoundments, pollution, and siltation.

Pollution and siltation are considered the principal threats to the Deer Creek and Gasheys Creek populations. In addition, the former population may be threatened by the possibility of in-

creased withdrawal of water from the stream of municipal use.

The Service has set the following deadlines for the submittal of comments on this proposal: August 10 for the Governor of Maryland and July 11 for the general public.

Key Mud Turtle Plymouth Red-bellied Turtle

Endangered status and Critical Habitat designation have been proposed by the Service for the Key mud turtle (*Kinosternon bauri bauri*) and the Plymouth red-bellied turtle (*Chrysemys rubriventris bangsi*) (F.R. 5/19/78).

Key Mud Turtle

The Key mud turtle occurs only in the lower Florida Keys, where it inhabits several small islands in Monroe County. Small freshwater ponds and adjoining wetlands provide the subspecies with shelter, food (the turtle is carnivorous), and nesting sites.

The presently rapid development of these islands poses a serious threat to the subspecies. The drainage of freshwater wetlands for housing construction, road widening, and mosquito control are reducing the habitat available for the turtle. In addition, there is evidence that, within its diminishing habitat, the Key mud turtle may now be having to compete with introduced species of pond turtles.

An additional threat is posed by automobile traffic on roads within the turtle's range.

All of Middle Torch Key, together with parts of Cudjoe's Key, Little Torch Key, Big Pine Key, and Stock Island, have been proposed as Critical Habitat for the turtle. These areas contain the subspecies' principal populations.

Plymouth Red-bellied Turtle

The known range of—and proposed Critical Habitat for—the Plymouth red-bellied turtle consists of 11 ponds in Plymouth County in southeastern Massachusetts. These ponds and adjacent areas provide cover, food (the subspecies is primarily herbivorous) nesting sites, and wintering areas for the turtle.

The chief threat to the turtle is alteration of this habitat principally by housing construction and road-widening projects. In addition, many people are known to use the turtles for target practice.

Background

On June 6, 1977, the Service announced that it would review the status of 12 turtles to determine whether any of them should be proposed for listing as Endangered or Threatened (see June 1977 BULLETIN). Included in this review were the Key mud turtle and red-bellied turtle (*Chrysemys rubriventris*).

(continued on next page)

Subsequently, the Service received information and comments from the State of Florida and several professional biologists regarding these two species. These responses were taken into account when the current proposal was prepared. All of the respondents recommended Federal protection for the turtles, with some specifically recommending Endangered status.

Additionally, although the red-bellied turtle was included as an entire species in the initial review notice, subsequent information suggested that the subspecies *C. r. rubriventris*, known from New Jersey south to North Carolina, does not qualify for listing under the Endangered Species Act of 1973.

Comments Due

Comments on this proposed rulemaking from the Governors of Florida and Massachusetts should be submitted by August 17; comments from the public are due by July 18.

Hawksbill Sea Turtle

Certain nesting areas on island beaches in the Commonwealth of Puerto Rico have been proposed as Critical Habitat for the hawksbill sea turtle (*Eretmochelys imbricata*) in a rulemaking issued by the Service (F.R. 5/24/78).

The Service believes that survival and recovery of the hawksbill, a tropicopolitan species that has been listed as Endangered since 1970, depends largely on the continued existence of suitable and undisturbed nesting areas, such as those proposed in the current rulemaking.

The proposed areas consist of all the beaches on Mona Island (Isla Mona), together with beaches on Culebra Island, Cayo Norte, and Isla Culebrita. Each area is designated as extending inland 0.1 mile from the mean high tide mark.

Hawksbill sea turtles are known to lay their eggs on these beaches and to feed on the rich offshore reefs around the four islands.

All of Mona Island is already listed as Critical Habitat for the yellow-

shouldered blackbird (Endangered), as well as for two Threatened species—the Mona ground iguana and the Mona boa (see March 1978 BULLETIN). In addition, one of the hawksbill's nesting beaches on Culebra Island slightly overlaps the Critical Habitat of the giant anole, an Endangered lizard (see August 1977 BULLETIN). Furthermore, some of the areas proposed for the hawksbill are also known to be occasional nesting sites for the leatherback sea turtle (Endangered) and for the loggerhead and green sea turtles (currently proposed for Threatened status—see April 1977 BULLETIN).

The Service has set the following deadlines for the submittal of comments on the hawksbill proposal: July 23 for the public and August 22 for the Governor of the Commonwealth of Puerto Rico.

West African Manatee

To help provide additional protection for a marine mammal native to Africa, the Service has issued a proposed rulemaking to list the West African manatee (*Trichechus senegalensis*) as a Threatened species (F.R. 5/17/78).

Threats to Survival

Found in the coastal waters and adjacent rivers of West Africa from Senegal to Angola, the manatee is threatened primarily by intensive subsistence hunting, which has reduced or exterminated local manatee populations. As noted in the Red Data Book by the International Union for the Conservation of Nature and Natural Resources (IUCN), which lists the species as vulnerable, "the high value of the meat has been an irresistible incentive for killing."

In addition, although specific information is not available, it is likely that habitat alteration is having a negative impact on the West African manatee. Furthermore, it is possible that locally significant losses occur as a result of shark netting (manatees are susceptible to accidental drowning in fish nets) and collisions with boats.

According to the Marine Mammal Commission: "Damming of rivers and increased boat and ship traffic in many areas may contribute to its [the species'] decline. Assuming that it is not one already, *T. senegalensis* is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."

Need for Additional Protection

The species is presently listed in Appendix I of the Convention on International Trade in Endangered Species of

Wild Fauna and Flora, and it is protected under Class A of the African Convention for the Conservation of Nature and Natural Resources (1969). In addition, most of the countries in which the species occurs have passed laws intended to protect the manatee.

Nevertheless, all of these protective measures appear to be ineffective.

Effect of Rulemaking

From the U.S. viewpoint, the species is already protected under the Marine Mammal Protection Act, which, among other things, imposes significant restrictions on importation. Listing the manatee as Threatened under the Endangered Species Act of 1973, as recommended by the Marine Mammal Commission in a November 1977 petition to the Service, would provide an additional prohibition against importation and would also restrict transportation or sale in interstate and foreign commerce.

Furthermore, Threatened status for the West African manatee would allow the United States to

- make the countries of West Africa aware of the importance of manatee protection
- sponsor and disseminate the results of manatee research
- encourage other countries to undertake research, establish reserves, and eventually reintroduce the species in selected areas
- encourage the acquisition of study specimens for scientific research, based on the accidental taking of manatees by African fishermen.

Comments on this proposal should be submitted to the Service no later than July 17.

Georgia ES Symposium

Research papers and status reports on more than 25 species of nongame animals and fish will be presented at a statewide Symposium on Rare and Endangered Wildlife to be held August 3-4 at the University of Georgia, Athens, Georgia.

The symposium will be sponsored by The Wildlife Society's Georgia Chapter and University of Georgia Student Chapter and the Georgia Department of Natural Resources. For more information, contact the Endangered Species Office, Georgia Fish and Game Division, Social Circle, Georgia 30279 (telephone: 404/557-2532).

Reference Note

All Service notices and proposed and final rulemaking are published in the *Federal Register* in full detail. The parenthetical references given in the BULLETIN—for example: (F.R. 6/30/78)—identify the month, day, and year on which the relevant notice or rulemaking was published in the *Federal Register*.

Option 1 would have applied all the standard prohibitions (and permit exceptions) for Threatened species to the African elephant and so essentially would have ended legal commercial import of ivory and other elephant products into the United States. Option 3 would have allowed importation only from nations providing satisfactory certification and evidence that exports to the United States were consistent with effective conservation programs for the elephant. Option 4 would have provided for importation from countries meeting the criteria of Options 2 or 3, and from countries that might not have elephant populations, but which could demonstrate that the product involved originated in a nation meeting the criteria of Options 2 or 3.

Effect of Rulemaking

The Service said that it is likely there will be an initial reduction in the amount of raw and worked ivory entering the United States as a result of the rulemaking because some of the major exporting and reexporting ivory nations are not members of the Convention. At present only one of the three countries with the largest elephant populations—Zaire—is a member of the Convention. However, a second major producer, Tanzania, has indicated it intends to ratify the Convention soon. Zambia is the third major elephant country. Of the 30 other African nations with elephant populations, Nigeria, Republic of South Africa, Niger, Ghana, Senegal, and Botswana are members.

Basis for Rulemaking

The Service based its determination of Threatened status on data gathered by Dr. Iain Douglas-Hamilton, chairman of the Elephant Specialist Group of the International Union for Conservation of Nature and Natural Resources (IUCN), during two years of a three-year study sponsored by the IUCN and the World Wildlife Fund, as well as on its own review of pertinent literature references and information accompanying comments on the proposal.

Douglas-Hamilton's data showed that, while there are at least 1.3 million of these animals still in existence, and there are still some large, apparently well-protected populations, the elephant is declining sharply in 18 of 33 countries where it is known and has recently become extinct in 4 other countries. He estimated that between 100,000 and 400,000 elephants were killed in 1976 for their ivory alone and stated that poaching had become a major threat to the species because of rising ivory prices. In addition, the spe-

cies is under pressure from loss of habitat, and it is hunted as a source of protein.

Review of Comments

Most of the approximately 1,000 comments received on the proposal were directed at the choice of options. Many conservationist groups supported the Option 1 ivory import ban. Most of the backers of this option pointed out that any other options might allow opportunities for considerable smuggling and other abuses of the regulations. Rep. Anthony C. Beilenson (D-Calif., who had introduced a bill before Congress to provide special emergency protection to the elephant) commented that law enforcement officials "feel that there is a much higher incidence of falsified or inaccurate documents than they can uncover." He recommended that a procedure be established whereby African nations could petition for hardship exemptions and have ivory quotas set on a case-by-case basis "in line with those nations' conservation programs."

The Service said it had rejected such an approach, which is a modified ver-

sion of Option 3, because it would have put the United States in the "difficult position of evaluating and passing judgment on the conservation and law enforcement policies of foreign nations." Moreover, the Service noted that the likely immediate effect of Option 3 would have been a total ban on elephant product imports while assessment procedures were set up. This course is neither practical nor necessary, the Service feels, because adequate legal policies already exist under the Convention.

Option 1 was rejected by the Service on the grounds that a total ban on ivory traffic is not in itself necessary and might in fact be detrimental to the long-term conservation of the elephant. "If such factors as natural mortality and the need to relieve excess population pressures in certain areas are taken into account," the Service said, "there seems no doubt that a substantial amount of ivory and other products, and a certain number of big game trophies could be taken on a regular basis without being detrimental to the overall status of the species." Acknowl-



A large bull African elephant in the wild

Photo by Leonard Lee Rue III

Elephant

edging that problems could develop in verifying that commercial ivory was taken under proper conservation programs and that there may be some basis for the argument that merely allowing the ivory trade to continue may encourage poaching, the Service noted that no substantive evidence had been presented to show that such problems were insurmountable under the proposed regulatory mechanism or would result in significant declines in elephant populations.

New Publication

The Heritage Trust Program of the West Virginia Department of Natural Resources has published *Volume 1: Vascular Plants* of a two-volume preliminary report on rare and endangered species of West Virginia. The report covers 360 plants and was prepared by Ronald H. Fortney, Roy B. Clarkson, Christina N. Harvey, and John Kartesz. Copies may be obtained for \$1.00 prepaid from the Department of Natural Resources Library, 1800 Washington Street, East, Charleston, West Virginia 25305.

Jetport (continued from page 1)

jetport on the kite and the Endangered Florida panther (*Felis concolor coryi*).

(Following an initial threshold examination, the Service said it was not able to identify any jeopardy to the panther as a result of the project.)

Only an estimated 160 Everglade kites remain in existence, according to a 1977 census, with the greatest concentration in State Water Conservation Area 3A, which lies immediately west of the proposed jetport. The area's largest nesting colony of kites, numbering 30 to 40 birds, is on a willow island 2.6 miles from the end of the proposed runway and slightly north of the proposed landing path.

To protect this colony from disturbance and pollution from overflights, the Service recommended that FAA locate the proposed runway approximately one-half mile south and at least three-quarters of a mile east from the presently planned site. The Service also recommended that the FAA restrict any development to the north, south, and west of the jetport to prevent intrusion into the kite's habitat, and said the FAA should maintain a monitoring program to detect any environmental changes, once the jetport begins operations, that would adversely affect the kite.

Economic Concerns

Approximately 245 commenters on the proposal, including about 155 persons who said their livelihood depended wholly or partly on ivory, supported Option 3. Most of these people also favored measures to ensure that commercial ivory had been legally taken in accordance with what are generally considered sound conservation practices.

Although nearly all African and ivory-reexporting countries were notified about the proposed rulemaking, only eight foreign governments responded. Liberia noted that the elephant had become rare because of poaching and supported Option 1. Botswana, Mozambique, and Rhodesia said the elephant was not endangered or threatened in their territories, that they had adequate conservation programs, and that a total ban on ivory export would be detrimental to their economies.

Various authorities in South Africa supported Option 2, and Tanzania indicated preference for both Options 2 and 3. Option 3 was found most suitable by Zambia. Hong Kong supported Option 4, observing that its ivory carving industry provided employment for 3,000 craftsmen and that 30 percent of its \$24 million in 1977 ivory exports went to the United States.

The Service said its opinion was strictly limited to use of the proposed jetport as a training facility and that, should the project be changed to a full-scale air terminal, consultation "must be reinitiated immediately."

The location under consideration, called Site 14, is about 15 miles northwest of Miami. It would replace the present Everglades Jetport, a commercial airline training facility that has been the subject of environmental concern since the late 1960's.

Impact Studies

The Service's opinion was based upon two studies conducted by a team of biologists headed by Noel F. R. Snyder. During a one-week period in April, the team arranged to have commercial airliners fly over the proposed jetport to simulate operations. Observation posts were set up near kite nesting areas. The team reported that less than 30 percent of the kites reacted to the planes by stopping feeding or watching them and that "in the great majority of cases birds gave no detectable signs of any response."

The team then traveled to Colombia and observed four snail kite colonies nesting in the vicinity of the Barranquilla airport. All are situated within

Option 4 also was favored by the IUCN Elephant Specialist Group, by the Republic of South Africa's Endangered Wildlife Trust, and the American Association of Zoological Parks and Aquariums. Dr. Douglas-Hamilton, writing for the IUCN, said it would be preferable for the United States to remain in the ivory trade and thereby have a means of controlling it.

The Service, however, rejected Option 4 because it would have incorporated investigatory measures required for Option 3 that were determined to be unwarranted.

Other Views

The National Wildlife Federation commented that ivory imports should be restricted to raw ivory tusks from the country of origin. But the Service said this would have denied reexporting nations such as Hong Kong, which are willing to follow Convention regulations, the opportunity to trade with the United States.

The National Rifle Association opposed the proposed listing on grounds that a Threatened classification was unwarranted and the four options were legally defective. The Service responded that the information contained in the rulemaking supported the threatened listing and emphasized that "all requirements of law have been met."

about 2 miles of the airport, including one only 500 yards from the end of the runway. This colony was the "most robust," of the four and consisted of at least 13 kites.

No clear signs were observed that kite activities were significantly affected by the jet overflights, the team said. But the study emphasized that during the team's three days of observations no controls were established to determine how the birds behaved when there were no overflights.

Study Conclusion

The team concluded that, while the short-term studies were unable to document any significant adverse impacts, this should not be "... taken as proof that there are no significant detrimental effects for two major reasons: (1) the magnitude of effects may have been below the resolution of the experiments and observations, and (2) it is possible that we chose the wrong effects to study and that if we had studied other effects of kite biology we might have found significant effects. However, the range of behavior studies were deliberately made as broad as practical ... so the possibilities have at least been narrowed down to a considerable extent."

Pending Rulemakings

The Service expects to issue rulemakings and notices of review on the subjects listed below during the next 90 days. The status or action being considered for each final and proposed rulemaking is given in parentheses.

The decision on each final rulemaking will depend upon completion of the analysis of comments received and/or new data made available, with the understanding that such analysis may result in modification of the content or timing of the original proposal, or the rendering of a negative decision.

Pending Final Rulemakings

- 6 butterflies (C.H.)
- Grizzly bear (C.H.)
- 15 crustaceans (E, T)
- Black toad (T, C.H.)
- New Mexican ridge-nosed rattlesnake (T, C.H.)
- 2 zebras (E)
- 7 Eastern land snails (E, T)
- 12 Western snails (T)
- 2 big-eared bats (E)
- 3 Ash Meadow plants (E)
- 5 plants (E)
- 6 San Francisco Bay Area plants (E, T)
- 2 California plants (C.H.)

Pending Proposed Rulemakings

- 10 North American beetles (E, T)
- 2 harvestmen (E, T)
- 3 mussels (C.H.)
- Rocky Mountain peregrine falcon population (C.H.)
- Colorado squawfish (C.H.)
- Virgin River chub (E, C.H.)
- 2 Hawaiian cave invertebrates (E, T)
- Desert tortoise (Beaver Dam slope population) (E, C.H.)
- Deregulation of Tecopa pupfish
- Unarmored threespined stickleback (C.H.)

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	33	227	260	3	18	21
Birds	68	144	212	3		3
Reptiles	10	46	56	6		6
Amphibians	5	9	14	2		2
Fishes	29	10	39	12		12
Snails		1	1			
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	15		15	2		2
Total	190	439	629	30	18	48

Number of species currently proposed: 135 animals
1,854 (approx.)

Number of Critical Habitats proposed: 42

Number of Critical Habitats listed: 28

Number of Recovery Teams appointed: 61

Number of Recovery Plans approved: 16

Number of Cooperative Agreements signed with States: 21

May 31, 1978

- Puerto Rican whip-poor-will (C.H.)
- Laysan duck (C.H.)
- Whip-scorpion (E, C.H.)
- Valdina Farms salamander and isopod (E, C.H.)
- Blunt-nosed shiner (E)
- 10 butterflies and moths (E, T, C.H.)
- 2 plants (E) and 6 plants (C.H.)
- San Marcos Spring fish and salamander (E, T, C.H.)
- 20 Appendix I spp.
- Cui-ui (C.H.)
- Whooping crane (C.H.—additional areas)
- Illinois mud turtle (E, C.H.)

- 7 Oregon freshwater fishes (E, T, C.H.)
- Light-footed clapper rail and California least tern (C.H.)
- Yellow-shouldered blackbird (C.H.)
- Santa Cruz long-toed salamander (C.H.)
- 2 Virginia fishes (T, C.H.)
- 3 Texas fishes (E, T, C.H.)
- 1 Texas/New Mexico fish (E)

Pending Notice of Review

- Desert tortoise

Abbreviations: E=Endangered, T=Threatened,
C.H.=Critical Habitat



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

Maine Project

Plan Advanced for Resolving Furbish Lousewort Conflict

The Service has recommended a conservation program for the Endangered Furbish lousewort (*Pedicularis furbishiae*) that, if followed by the U.S. Army Corps of Engineers, could permit construction of the proposed Dickey-Lincoln School Lakes power project in Maine without jeopardizing the plant's continued existence.

The proposed program, outlined in a biological opinion transmitted to the Corps of Engineers on June 27, is the product of 18 months of studies and consultation between the two agencies. "This was one of the most complex consultations yet," commented Lynn Greenwalt, Director of the Service, "but it was much less difficult than it could have been because of the cooperative attitude of the Corps."

Consultations were initiated following the rediscovery of the lousewort, a member of the snapdragon family long thought to be extinct until it was identified during a 1976 environmental impact study of the power project for the Corps.

A total of 879 specimens were found at 21 stations along 160 miles of the main stem of the St. John River from the project site in Aroostook County, Maine, downstream to the mouth of the Aroostook River in New Brunswick, Canada. Most of the plants are situated in a narrow zone just above the river itself, usually on shaded slopes facing a northerly direction.

When the Service listed the Furbish lousewort as Endangered on April 26, 1978 (see the May 1978 BULLETIN), it cited the proposed power project as well as refuse dumping, natural landslides, construction, and lumbering as endangering factors.

The Dickey-Lincoln School Lakes
(continued on page 5)

Recovery Charted For Four Species

Habitat Cited For Hawaiian Stilt, Coot, and Gallinule

The Service has approved a recovery plan calling for the acquisition and maintenance of scarce wetlands habitat in the Hawaiian Islands to restore the populations of three Endangered waterbirds. The plan covers the Hawaiian stilt or aeo (*Himantopus mexicanus knudseni*), the Hawaiian coot or alae keokeo (*Fulica americana alai*), and the Hawaiian gallinule or alae ula (*Gallinula chloropus sandvicensis*).

The recovery team, headed by Ronald L. Walker of the Hawaii Division of Fish and Game, has established the following primary objective to be carried out by the plan: "To provide and maintain populations of at least 2,000 Hawaiian stilts, 2,000 Hawaiian coots, and 2,000 Hawaiian gallinules in, at a minimum, the habitats and island distribution existing in 1976 and to remove these Endangered species from the Endangered and Threatened status lists."

If the recommendations detailed in the plan are carried out, the recovery team said, attainment of the objective appears biologically feasible. The team estimates the current statewide population of the stilt at 1,500 birds, the coot at 2,500 birds, and the gallinule at a total of 750 birds. But owing to the secretive nature of the gallinule, which lives in heavily vegetated areas of Kauai and Oahu, the team said the population estimate for the bird was made on a "best judgment" basis rather than an actual count.

Habitat Competition

In the early days of the islands, before the arrival of Europeans in the 18th century, the three subspecies of waterbirds appear to have flourished because wetlands were far more plentiful than today. The early Hawaiians

(continued on page 6)

Black-Footed Ferret Tied To Prairie Dog Management

A recovery plan that sets a primary objective of maintaining at least one wild, self-sustaining population of the extremely rare Endangered black-footed ferret (*Mustela nigripes*) in each of the 12 States covering its former range has been approved by the FWS.

However, the recovery team, headed by Raymond L. Linder of the South Dakota Cooperative Wildlife Research Unit, acknowledged that this objective was difficult to achieve. "Many research and management activities cannot be carried out simply because the black-footed ferret cannot be found for work or study," the team said.

Accordingly, the recovery plan emphasizes prairie dog management, because these animals can be managed and now provide habitat essential to the ferret. "Although some black-footed ferrets have been held at the Patuxent Wildlife Research Center," the team said, "successful propagation techniques have not been devel-

(continued on page 6)



Hawaiian stilt

photo by David L. Olsen

Regional Briefs

Endangered Species Program regional staffs have reported on the following recent activities in their areas:

Region 1. A two-year search has turned up a pair of Marianas mallards (*Anas oustaleti*), a species once feared extinct. The male and female were sighted twice at two different locations on Saipan's Lake Susupe. Service officials believe more of the mallards may be present, and attempts will be made to capture several birds for an artificial breeding project.

Two pairs of the Hawaiian crow or alala (*Corvus tropicus*) are in a captive breeding program at the State's Paka-kaloa Propagation Station. One pair recently produced an egg—the first known from an alala in captivity. The station's alala and Hawaiian goose or nene (*Branta sandvicensis*) projects are assisted by Service contract funds.

A total of 140,000 larval cui-ui (*Chasmistes cujus*) have been released into

the lower Truckee River, the fish's historical spawning waters, by the Reno Fisheries Office. Lowering of Pyramid Lake's water level by irrigation diversion has prevented the cui-ui from migrating from the lake to the lower Truckee to spawn.

Region 2. Dr. W. L. Minckley and Dr. Robert R. Miller are conducting a status and distribution survey of Rio Yaqui fishes in Mexico under a contract awarded to Arizona State University. So far the survey has found the Yaqui stoneroller (*Campostoma ornatum pricei*) to be widespread and the Yaqui chub (*Gila purpurea*) to be in some difficulty. Data are still not complete for the Yaqui shiner (*Notropis formosus burnsi*), Yaqui catfish (*Ictalurus pricei*), Yaqui topminnow (*Poeciliopsis occidentalis sonoriensis*), and Yaqui sucker (*Catostomus bernardini*).

The Service also is considering protection for some of the Yaqui fishes. The six Yaqui species at one time made their way upstream into the

United States, but only three species remain in two small Arizona springs.

A litter of five Mexican wolves (*Canis lupus baileyi*) was produced this spring at the Sonora Desert Museum, Tucson, Arizona. Four of the pups survived.

Region 3. Two male Kirtland's warblers were observed in Wisconsin. Only five previous sightings have been recorded. One of the birds had been banded in 1972 in Crawford County, Michigan.

Region 4. The Red Wolf Recovery Team has surveyed Ossabaw Island, Georgia, as a possible new translocation site for the wolf. Other potential sites also are being evaluated.

Region 5. University of New Hampshire researchers have received a contract to determine if the Furbish lousewort (*Pedicularis furbishiae*) can be artificially propagated through cell and tissue cultures (or cloning). Such techniques have been successful with orchids and some commercially important trees. It will take six months to learn if lousewort propagation is feasible. If it is, the project also calls for transplants to the wild.

Alaska Area. Members of the Aleutian Canada Goose Recovery Team and Service personnel toured the Aleutian Islands National Wildlife Refuge in July and visited the Agattu Island captive population of *Branta canadensis leucopareia*, which is slowly being released to the wild. Presently, 139 geese are on the island. It is hoped they will become a nesting flock on Agattu and winter in southern California.

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Opler Named Chief of OES Biological Support Branch

Dr. Paul A. Opler, 39, has been appointed chief of the Office of En-
dangered Species' Branch of Bio-
logical Support. He had been serv-
ing as acting chief of the branch
since 1977.

Opler joined the Office of Endan-
gered Species in 1974 as staff en-
tomologist. He holds a Ph.D. in en-
tomology from the University of Cali-
fornia at Berkeley and is active in
several scientific organizations, in-
cluding the Entomological Society
of America and the Association for
Tropical Biology.

Correction

The West Indian monk seal was in-
correctly identified on page 7 of the
June issue of the BULLETIN. It should
have been listed as *Monachus tropi-
calis*, instead of *M. schauinslandi*.

Conservation Needs of Sea Turtles Come Under Review

A comprehensive plan for the recovery and management of sea turtles was reviewed during a June 26-27 meeting at Tampa, Florida, co-hosted by the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS), which share conservation responsibilities for the turtles.

The plan was drafted by the NMFS Southeast Regional Office and is focused primarily on improving recovery planning for the western Atlantic populations of sea turtles, including those found throughout the Caribbean. During the discussion sessions, participants generally agreed that too little is known about the true status, life history, and needs of marine turtles, which spend most of their lives at sea.

They recommended that all available resources be pooled to develop a sound management program for the species, to include additional research into the cause of population declines and consolidation of existing data on population trends.

The plan covers three turtle species already classified as Endangered—the hawksbill sea turtle (*Eretmochelys imbricata*), leatherback sea turtle (*Dermochelys coriacea*), and Kemp's (or Atlantic*) ridley (*Lepidochelys kempii*); and three proposed for Threatened status—the olive (or Pacific*) ridley (*Lepidochelys olivacea*), green turtle (*Chelonia mydas*), and loggerhead sea turtle (*Caretta caretta*).

Several conservation priorities were discussed during workshop sessions on (1) testing of excluder panels for nets used by shrimp trawlers to reduce the accidental taking of sea turtles, (2) internesting turtle distributions in the Gulf of Mexico and studies of nesting beaches, (3) Caribbean activities, and (4) law enforcement.

The meeting also produced agreement that some type of sea turtle recovery team development was in order. But it was not decided whether an overall coordinating team, or a

team geared to planning for each species and/or population would be the best approach.

Information developed during the meeting will be used by the FWS and NMFS to rework the draft plan. A meeting has been scheduled tentatively for January 1979 to review the revised plan, which is expected to be put into final form over the next several months.

More than 100 representatives of Federal and state agencies, private industry, universities, and conservation organizations attended. Details of their recommendations and other actions, plus a listing of items addressed at the workshops, will be available in the form of summary minutes. Copies may be obtained from the Fisheries Management Division, Southeast Region, National Marine Fisheries Service, 9450 Koger Boulevard North, Duval Building, St. Petersburg, Florida 33702.

*Participants agreed that the Atlantic and Pacific ridleys should be commonly named the Kemp's and olive ridleys, respectively.

Prime Bald Eagle Roosting Site Protected from Logging



A panoramic view of the newly acquired Bear Valley National Wildlife Refuge

U.S. Forest Service photo

The Service has acquired by condemnation a 240-acre stretch of privately owned timberland in Klamath County, Oregon, that is used nightly by about 300 roosting bald eagles (*Haliaeetus leucocephalus*). This is the largest known roosting site of the species (which is listed as Threatened in Oregon) in the lower 48 states.

Logging of the area, which is covered with tall ponderosa pines, was

to have been started June 1 by the Thomas Lumber Company, which had purchased the timber from the landowner. On May 31, the U.S. attorney filed a "declaration of taking" with an "order of immediate possession" in U.S. district court in Portland to acquire the property and establish it as the Bear Valley National Wildlife Refuge.

The Service said negotiations to

buy the property had been under way for two months, but had stalled over agreement on price; consequently, the condemnation proceeding was the only way to prevent the pine tree eagle roosts from being cut down. At the time of acquisition, the Service's appraised value of \$200,000 for the land was deposited with the court, which will determine just compensation for the landowner at a later date.

Georgia Broadens Scope Of Endangered Species Conservation

The future of a small population of Colonial (or St. Mary's) pocket gophers (*Geomys colonus*), listed as endangered by the State of Georgia, is one of the major issues now being considered under Georgia's Protected Species Program.

The gophers, believed to number less than 50, inhabit a 12-square-mile area in Camden County that is intensively managed for commercial timber and presently in a state of rapid development. Biologists say alteration of the area, if not carefully regulated, could cause the demise of the gophers.

Accordingly, the Georgia Department of Natural Resources has launched a status survey of the gopher to determine the size and location of colonies, life history and reproductive trends, and the feasibility of establishing new colonies in nearby habitat.

Also to be resolved is the taxonomic status of *G. colonus*, as it has not been clearly distinguished from a similar species, *G. pinetis*—a pocket gopher that also occurs in Camden County but is not on the State's endangered list.

Georgia's Endangered Wildlife Act of 1973 encourages the preservation of endangered species habitat. The effects of timber harvesting, farming, grazing, housing construction, and industrial development are therefore being studied to determine their impact on the endangered gopher and its preferred habitat.

Federal Aid Projects

Georgia signed a cooperative agreement with the Fish and Wildlife Service last October, making the State eligible to receive Federal Endangered species grant-in-aid matching funds to expand its endangered species conservation efforts. The Colonial pocket gopher study, contracted through the University of Georgia and expected to cost \$19,000 through fiscal year 1979, has been approved for two-thirds matching fund assistance.

Other ongoing Federal aid research projects include a distribution study of the eastern indigo snake (*Drymarchon corais couperi*) and a survey of the American alligator (*Alligator mississippiensis*). The \$18,000 study of the snake, now listed by the Federal Government as well as Georgia as a Threatened species, will attempt to determine the current status and range



An eastern indigo snake explores ground cavity

Photo by Ronald Odum,
Georgia Dept. of Natural Resources

of the eastern indigo and to locate prime habitat areas along the coastal plain for later protection and/or management. (Once documented, areas determined essential to the snake's continued survival will be considered for Federal designation as Critical Habitat.)

Currently, the Georgia Department of Natural Resources estimates there are 80,000 to 100,000 alligators in the State. This survey—now in its fourth year—will employ a night count technique to establish population trends as part of an annual regional survey. Based on an evaluation of data from the 1978 survey and an additional survey by State biologists, the department's Game and Fish Division recently proposed removal of the alligator from Georgia's protected species list, in that the density of the alligator population in some coastal areas has reached the nuisance level. The alligator is now federally classified as Endangered in all of Georgia except coastal areas, where it is listed as Threatened.

A total of 23 animal species, including 19 on the Federal list, have been classified as endangered by Georgia. Under its Wildflower Preservation Act of 1973, the State lists 58 plants as endangered or threatened. The list includes persistent trillium (*Trillium perispermum*), a member of the lily family that recently received Federal protection as an Endangered species (see the May 1978 BULLETIN).

State ES Management

Endangered species research and management is coordinated by the Game and Fish Division and partially funded out of general State revenues. The endangered wildlife coordinator is Ron R. Odum, a wildlife biologist, who is assisted by Rosalind Platt. Mary Ann Neville acts as coordinator for endangered plants.

The FY 1978 and 1979 budgets currently approved for endangered species amount to more than \$110,000, including nearly \$75,000 in Federal Endangered species matching funds. About one-third of the grant is being directed toward information and education, to be coordinated through separate offices of the natural resources department.

Odum believes the development of a sound public relations effort during the initial stages of Georgia's Protected Species Program will help lay a firm foundation of public support and understanding on which to build an expanded, adequately staffed program in future years. Project personnel are already working to produce a 30-minute film on Georgia's endangered species, and will soon begin updating the department's endangered wildlife publications. (Two illustrated reports now available from the department are "Georgia's Protected Wildlife," which contains descriptions of endangered and threatened animals, and "Georgia's Protected Plants," describing all listed plant taxa.)

(continued on next page)

Federal funds also are being applied to endangered species administration and coordination (to cover salaries, equipment, and operating expenses) and to law enforcement officer training in endangered species identification, natural history, and habitat needs.

Contract Studies

In addition to implementing and coordinating endangered species efforts, the Game and Fish Division administers the statewide game management program (and associated fish and game licensing). The division's general management and protective measures for both nongame and endangered species involve population research and surveys, ecological research, habitat acquisition and preservation, captive propagation and restocking, and pesticides monitoring.

Leon Kirkland, director of the Game and Fish Division, believes the contract approach to endangered species conservation is the only way to operate effectively within the present budgetary constraints. "Much of our endangered species work is contracted out," Kirkland says, "because we feel most of the expertise on our rare resident species may now be found at the private and university levels."

In addition to the federally supported studies, the State has contracted work on the following federally listed species and subspecies: the Florida manatee (*Trichechus manatus latirostris*), shortnose sturgeon (*Acipenser brevirostrum*), American peregrine falcon (*Falcon peregrinus anatum*), and bald eagle (*Haliaeetus leucocephalus*).

Georgia anticipates expanding its endangered species research activities through FY 1979, with proposed projects expected to cost nearly \$185,000 (over and above the amount budgeted for current federally supported projects). The State's proposed activities (none of which have been approved for Federal grant-in-aid assistance in FY 1979) include:

- Status determinations of selected vertebrates (based on reports from a 1974 endangered species workshop)
- Coordination of research efforts and management of nesting female loggerhead sea turtles (*Caretta caretta*) on Georgia coastal islands
- Studies of hatchery techniques to promote propagation of loggerhead sea turtles in Georgia
- Continuation of the Ossabaw loggerhead conservation and research program
- Statewide osprey (*Pandion haliaeetus*) nesting survey
- Restoration of bald eagle populations on the Georgia coast.

Lousewort (continued from page 1)

project—intended to provide a source of electricity to help meet the anticipated future power needs of New England—involves the construction of two dams in northern Aroostook County that would flood approximately 88,000 acres of land and 267 miles of streams, including 55 miles of the St. John River.

If the dams were built as planned, the Service said in its proposal, 353 Furbish lousewort plants at thirteen stations over 35 miles of the plant's range would be inundated. Within the 70-mile zone downstream from the project, 162 more plants at five stations would be jeopardized by dumping of refuse over river banks, construction, and other stream bank modifications.

Biological Factors

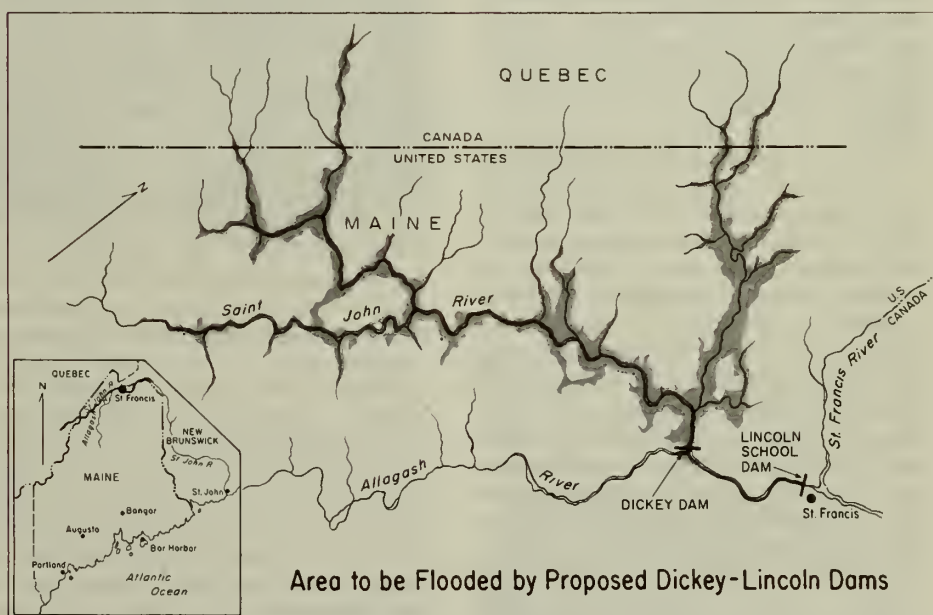
In devising a proposed conservation program to resolve the conflict, the Service said various aspects of the lousewort's reproductive and population biology were of critical importance. Of primary concern is the fact that natural establishment of new lousewort colonies may depend upon prior disturbance of river banks, either by flooding or landslides. Moreover, artificial establishment of new colonies is dependent upon knowledge of possible hemiparasitic relationships, transplant techniques, and seedling establishment.

The biological data indicate the lousewort is an obligate outbreeder, hence the presence of appropriate bumblebee (*Bombus vagans*) populations is necessary to ensure seed set and genetic variability of progeny.

Accordingly, the Service said the conservation program should include, at a minimum, the following elements:

1. Development of information leading to a functional understanding of the habitat needs and propagation techniques of the Furbish lousewort.
 2. Acquisition and protection of existing habitats below the project impoundment area that currently support lousewort populations.
 3. Acquisition of habitat identified as capable of supporting new populations of louseworts.
 4. Establishment of new, self-sustaining colonies through transplantation, seeding, or other appropriate techniques.
 5. Obtaining better information on the effects of post-construction downstream flows on the lousewort and its habitat.
 6. Development of a monitoring program capable of detecting any changes in the lousewort's biological status, such as habitat changes, population increases or decreases, and any significant variations in microclimatic conditions.
- The Service's biological opinion—the first involving an Endangered plant—cautioned that if any new information is developed during the conservation program that would affect the lousewort, consultation must be reinitiated immediately.

Service biologists believe that, if the conservation program is followed, it could result in increased numbers of the species and better protection of the plant's habitat.



Area to be Flooded by Proposed Dickey-Lincoln Dams

Black-Footed Ferret Recovery Tied to Prairie Dog Management

(continued from page 1)

oped and existing wild populations must stave off extinction of the species in the foreseeable future. Since we know little of the biology of the black-footed ferret, research is essential. Management, however, must proceed based upon the limited information available."

In Search of Ferrets

Originally, the ferret's range extended from Saskatchewan and Alberta, Canada, down across the Great Plains into Texas, New Mexico, and Arizona. There is some evidence that the ferret, while uncommon because of the infrequency of confirmed sightings, may not have been as rare as once believed. But there seems little doubt that it declined when systematic eradication programs were carried out against the prairie dog—the ferret's chief prey—starting in 1900.

Control efforts currently are keeping prairie dog numbers at relatively low levels in most areas within the ferret's former range. Since 1964, there have been a number of black-footed ferret sightings at prairie dog towns in South Dakota. (Four specimens involved in the Patuxent Wildlife Research Center propagation project were captured in

the early 1970's in the State. Only three of these still survive.)

To locate more ferret habitat, the recovery plan recommends that priority be given to (1) mapping of prairie dog towns, and (2) mounting searches of the most promising towns for the ferret. The recovery team said that theoretically all prairie dog towns are potential ferret habitat, but small, isolated towns probably will not sustain a ferret population.

The plan also recommends searching other areas, such as pocket gopher colonies, kangaroo rat diggings, and ground squirrel colonies, for ferret habitat. There have been prior reports of ferrets in such locations.

New Search Techniques

Emphasis should be placed on searching areas where black-footed ferrets have been reported in the last decade, the team said. To aid the traditional visual type of survey, the team has recommended development of new techniques, including odor sensing, photography, gas chromatography, baiting, and the use of trained dogs.

The Service's Denver regional office personnel and New Mexico's Endangered Species Program currently are

involved in projects to train dogs to sniff out ferrets. (See the June 1978 BULLETIN.)

As a further aid in finding the elusive creature, the recovery plan says sightings by the public should be solicited.

The States cooperating in the recovery plan, in addition to New Mexico, are Arizona, Colorado, Kansas, Montana, Nebraska, North Dakota, Oklahoma, South Dakota, Texas, Utah, and Wyoming. Total Federal costs for executing the plan were estimated at \$1.6 million over a three-year period, with the Service providing most of the funding. Additional contributions would be made by the 12 States.

Once black-footed ferrets are located, the recovery plan details steps for protecting and managing wild populations. The goal of maintaining at least one population in each of the States may be accomplished, in some instances, through transplants.

"Attainment of the primary objective will not necessarily result in removal of the black-footed ferret from the list of Endangered species," the team said. "However, it will provide a measurable degree of protection against extinction of the species."

Habitat Restoration Mapped For Three Hawaiian Waterbirds

(continued from page 1)

established an extensive system of coastal fish ponds and engaged in large-scale wetland taro farming. But as the composition of the human population of the islands changed, bringing new dietary preferences, taro cultivation declined sharply—from about 19,000 acres in 1900 to only 510 acres in 1960.

Part of the loss in taro field habitat was cushioned for several decades by rice culture. But this ended around 1963. In the meantime, there was a widespread conversion of former natural and manmade wetlands to other agricultural applications and to such urban uses as sites for hotels, housing subdivisions, golf courses, shopping centers, military bases, highways, and industrial plants. The recovery team said the encroachment of exotic species of plants, such as mangrove and *Panicum* grass, has degraded much of the remaining habitat, and the introduction of predators (cats, dogs, mongooses, and three species of rats) along with hunting (which was permitted until 1939) have also played a part in the birds' decline.

Habitat Acquisition

The recovery team identified certain land and water areas as "primary habitat" for the waterbirds and set forth a plan for protecting and stabilizing them through acquisition and more intensive management. Secondary habitat areas and former or potential areas have been noted by the recovery team for future development.

A number of ponds on the islands of Oahu, Maui, Molokai, Hawaii, and Kauai have been recommended either for acquisition by the Service as refuges or for more intensive management in the case of ponds already on Federal, State, or city property.

One of the largest proposed purchases is Kealia pond, near the rapidly expanding resort area of Kihei on the southern shore of Maui. The recovery team said the pond is one of Hawaii's most important areas for wintering migratory waterfowl and shorebirds and, if fully developed, "could well be the best area in the State for stilt and possibly coot." Because the area is subject to urbanization, however, the team feared that acquisition of a 500-

acre tract including Kealia pond for a refuge could cost in excess of several million dollars.

On the island of Oahu, the plan recommends the development of Kii and Punamano ponds, which have gone dry, to compensate for the loss of important waterbird habitats at Kaeleputa and Kuapa ponds, Salt Lake, and Moanalua. Restoration is recommended for Kawainui marsh, a former fish pond and the largest freshwater marsh (750 acres) left in the State.

Productivity Measures

The recovery plan says more public education and better law enforcement are needed to protect the waterbirds, especially during the breeding season.

The team said water levels in refuges and other habitat areas should be carefully managed to maximize nesting success and enhance food availability. Several research studies were recommended to increase knowledge about mortality factors, life history, and feeding habits, which also could lead to enhanced productivity of the three subspecies.

Rulemaking Actions — June 1978

Critical Habitat Named For Long-Toed Salamander

Two land-and-water areas in Santa Cruz County, California, have been proposed by the Service as Critical Habitat for the Santa Cruz long-toed salamander (*Ambystoma macrodactylum croceum*), an Endangered subspecies that ranks among the rarest amphibians in the United States (F.R. 6/22/78).

Comments from the public on this proposed rulemaking should reach the Service no later than July 22; comments from the Governor of California are due by September 21.

Background

The existence of this salamander remained unknown until 1954, when the animal was discovered at Valencia Lagoon, just north of Rio Del Mar near the shores of Monterey Bay. Two years later, a second population was found at Ellicott Slough, about four miles to the southeast. Subsequently, several other populations were discovered in both Santa Cruz County and adjoining Monterey County.

Biological studies revealed that the salamander lives in areas of woodland and chaparral for most of the year. The animal is rarely seen, except when it migrates to breed in nearby freshwater ponds, which provide sufficient

space for larval development and an adequate food supply for the larvae.

The total population of this subspecies is less than 10,000.

Need for Protection

Because of its extremely limited range and specialized breeding habits, the salamander, which has been listed as Endangered since 1967, is very vulnerable to habitat alteration. As the Service emphasizes, "any further degradation of . . . [the subspecies'] living space would be critical to its survival."

Steps have already been taken to protect, restore, and manage this living space, especially at Valencia Lagoon and Ellicott Slough, which constitute a substantial portion of the subspecies' entire known range and have been identified as "essential habitat" by the Santa Cruz Long-Toed Salamander Recovery Team.

Critical Habitat designation for the Valencia Lagoon area (about 65 acres) and the Ellicott Slough area (about 157 acres), a large percentage of which is now owned by the State of California and the U.S. Fish and Wildlife Service (and thereby protected from major disturbance), will provide full protection to the salamander under section 7 of the Endangered Species Act of 1973.

Snail Darter Recovery Team

The Service has appointed a recovery team for the snail darter (*Percina tanasi*), an Endangered species that played a central role in the U.S. Supreme Court's recent landmark decision on the Tellico Dam located in Tennessee (see the June 1978 BULLETIN).

The team, established on the joint recommendation of Assistant Secretary of the Interior Robert L. Herbst and Tennessee Valley Authority Board of Directors' Chairman David Freeman, is headed by Harold Hurst, regional manager of the Tennessee Wildlife Resources Agency.

The team will collect more information on the status and biological requirements of the snail darter and will then develop a comprehensive recovery plan. Consideration will be given to such options as captive breeding and reestablishment of the fish outside of its present range on the Little Tennessee River.

Other members of the recovery team include Price Wilkins, Tennessee Wildlife Resources Agency; Wayne Starns and David Etnier, University of Tennessee; Richard Fitz and Gary Hickman, Tennessee Valley Authority; and Hallett Boles, U.S. Fish and Wildlife Service.



Kauai cave amphipod

Photo by W. P. Mull, Bishop Museum, Honolulu

Kauai Cave Wolf Spider Kauai Cave Amphipod

The Service has issued a proposed rulemaking to designate the Kauai cave wolf spider (*Adelocosa anops*) as Endangered and the Kauai cave amphipod (*Spelaeorchestia koloana*) as Threatened, and to determine Critical Habitat for both species (F.R. 6/16/78).

The Service believes that these species require full protection under the Endangered Species Act of 1973, in that both arthropods are experiencing decreasing population levels and ad-

verse habitat modification, and their entire known range is limited to only three localities on the Hawaiian island of Kauai.

The Service has set the following deadlines for the submittal of comments on this proposal: August 15 for the public and September 14 for the Governor of Hawaii.

Kauai Cave Wolf Spider

This spider is found only in an underground lava tube known as Koloa Cave No. 2, which is located on the southeastern coast of the island of Kauai.

Human activities represent the chief threat to the species and its habitat. Listed and marked as a civil defense shelter, located near a recently completed highway, and well known to the public, the cave has become subject to increased visitation. The entire cave has been recommended as Critical Habitat for the spider.

Kauai Cave Amphipod

This species occurs in Koloa Cave No. 2 and also in the nearby Koloa Cave No. 1, as well as in a small limestone cave 7 kilometers (almost 5 miles) away. Like the other cave, Koloa Cave No. 1 is a 150-meter-long lava tube that is listed and marked as a civil defense shelter and has been subjected to increased human visits.

The limestone cave, a large, elevated sea cave in which detritus from tree roots provides food for the amphipod, is being destroyed by quarrying activities.

All three caves have been proposed as Critical Habitat for this species.

Pending Rulemakings

The Service expects to issue rulemakings and notices of review on the subjects listed below during the next 90 days. The status or action being considered for each final and proposed rulemaking is given in parentheses.

The decision on each final rulemaking will depend upon completion of the analysis of comments received and/or new data made available, with the understanding that such analysis may result in modification of the content or timing of the original proposal, or the rendering of a negative decision.

Pending Final Rulemakings

- 6 butterflies (C.H.)
- Grizzly bear (C.H.)
- 13 crustaceans (E, T)
- Black toad (T, C.H.)
- New Mexican ridge-nosed rattlesnake (T, C.H.)
- 2 zebras (E)
- 7 Eastern land snails (E, T)
- 12 Western snails (T)
- 2 big-eared bats (E)
- 3 Ash Meadow plants (E)
- 5 plants (E)
- 6 San Francisco Bay Area plants (E, T)
- 2 California plants (C.H.)
- Leatherback sea turtle (C.H.)

Pending Proposed Rulemakings

- 10 North American beetles (E, T)
- 2 harvestmen (E, T)
- 3 mussels (C.H.)
- Rocky Mountain peregrine falcon population (C.H.)
- Colorado squawfish (C.H.)
- Virgin River chub (E, C.H.)
- Desert tortoise (Beaver Dam slope population) (E, C.H.)
- Deregulation of Tecopa pupfish
- Unarmored threespined stickleback (C.H.)
- Puerto Rican whip-poor-will (C.H.)
- Laysan duck (C.H.)
- Whip-scorpion (E, C.H.)

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	33	227	260	3	18	21
Birds	68	144	212	3		3
Reptiles	10	46	56	6		6
Amphibians	5	9	14	2		2
Fishes	29	10	39	12		12
Snails		1	1			
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	15		15	2		2
Total	190	439	629	30	18	48

Number of species currently proposed: 137 animals
1,850 plants (approx.)

Number of Critical Habitats proposed: 45

Number of Critical Habitats listed: 29

Number of Recovery Teams appointed: 62

Number of Recovery Plans approved: 18

Number of Cooperative Agreements signed with States: 21

June 30, 1978

- Valdina Farms salamander and isopod (E, C.H.)
- Blunt-nosed shiner (E)
- 10 butterflies and moths (E, T, C.H.)
- 2 plants (E) and 6 plants (C.H.)
- San Marcos Spring fish and salamander (E, T, C.H.)
- 20 Appendix I spp.
- Cui-ui (C.H.)
- Whooping crane (C.H.—additional areas)
- Illinois mud turtle (E, C.H.)
- Bolson tortoise (E)
- Coachella Valley fringe-toed lizard (T, C.H.)
- 7 Oregon freshwater fishes (E, T, C.H.)
- Light-footed clapper rail and California least tern (C.H.)
- Yellow-shouldered blackbird (C.H.)
- 2 Virginia fishes (T, C.H.)
- 3 Texas fishes (E, T, C.H.)

- 1 Texas/New Mexico fish (E)
- Leopard (reclassification to T)

Pending Notice of Review

- Desert tortoise

Abbreviations: E=Endangered, T=Threatened, C.H.=Critical Habitat

New Publication

The Service has issued *An Illustrated Guide to the Proposed Threatened and Endangered Plant Species in Colorado*. The 114-page guide was prepared under contract by Ecology Consultants, Inc. of Fort Collins, Colorado. Copies may be obtained from the Fish and Wildlife Service, P.O. Box 25486, Denver, Colorado 80225.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

Revised Wolf Control Measures Proposed By Service

Modifications have been proposed by the Service in its special regulations concerning the taking of gray wolves (*Canis lupus*) in Minnesota to extend and clarify the Service's authority in dealing with wolf depredations (F.R. 7/5/78).

Due to the high incidence of predation in certain areas of the State, along with mounting local concern that wolves may be posing an increasing threat to human livelihood, the Service has proposed to elaborate on existing regulations in an effort to resolve conflicts which may otherwise work against the long-term welfare of the wolf. In cases of unusually large numbers of continuing depredations on livestock or other domestic animals, the proposed rulemaking would allow the legal taking of wolves without regard to whether the animal(s) involved could be tied to a particular depredation so long as no adverse consequences to the overall wolf population in the area would result.

In an earlier rulemaking, the Service reclassified the wolf as a Threatened species in Minnesota and designated Critical Habitat for the species in that

(continued on page 3)

Tellico Dam Options Listed In New Report

The Tennessee Valley Authority (TVA) and the Department of the Interior have released a joint preliminary report to the Congress outlining alternatives for completing TVA's Tellico Dam.

While not purporting to recommend any specific plan for resolution of the matter at this time, the August 10 report reveals that there are several

(continued on page 2)

3 Sea Turtles Listed As Threatened: Certain Populations Endangered

Following years of factfinding and debate, Endangered Species Act protection has been extended to the three remaining major species of sea turtles.

In a final rulemaking issued jointly by the National Marine Fisheries Service (NMFS) of the Department of Commerce and by the Fish and Wildlife Service, the loggerhead sea turtle (*Caretta caretta*), green sea turtle (*Chelonia mydas*), and olive (formerly Pacific) ridley (*Lepidochelys olivacea*) have been classified as Threatened species (F.R. 7/26/78).

In addition, the vulnerable Florida and Mexican Pacific coast breeding populations of green sea turtles and the Mexican Pacific coast population of breeding olive ridleys have been listed as Endangered. The rulemaking takes effect August 26.

All populations of Kemp's (formerly Atlantic) ridley (*Lepidochelys kempii*), hawksbill sea turtle (*Eretmochelys imbricata*), and leatherback sea turtle (*Dermochelys coriacea*) were previously listed as Endangered in 1970.*

Background

Actions to federally protect these turtles have been in progress since December 28, 1973, when a proposal to list the loggerhead and green was published by FWS under the Endangered Species Conservation Act of 1969. Coincidentally, on that same day the Endangered Species Act of 1973 was signed into law, superseding the old legislation and conferring legal authority for such a proposed regulation upon both Interior and Commerce.

In brief, the present rulemaking stems from a 1974 status review of the three species (in response to a petition requesting their listing) which led to a

* Herpetologists and others involved in sea turtle research and recovery planning generally agree that the Atlantic and Pacific ridleys should be commonly named the Kemp's ridley and olive ridley, respectively.

May 20, 1975, NMFS/FWS proposal to list the loggerheads, greens, and "Pacific" ridley as Threatened species. (On August 20, 1975, notice of intent to hold public hearings and prepare an environmental impact statement on the matter was issued.) On June 16, 1976, NMFS/FWS issued a proposal to list the green and loggerhead sea turtles and "Pacific" ridley under the "similarity of appearance" provision of the law.

The proposed regulations have been opened to comment three times—in 1975, 1976, and most recently from March 27 to April 17, 1978. This has yielded more than 70 substantive comments on a number of key issues. These issues included whether or not to list the entire three species of sea turtles, or individual populations, as Endangered or Threatened; whether to allow exceptions for mariculture and incidental taking by commercial fishermen; and whether to allow subsistence taking of the turtles.

(continued on page 9)



This green sea turtle was being offered for sale in a Belize market when photographed by C. Kenneth Dodd, Jr., Office of Endangered Species herpetologist. Dodd bought the turtle and released it back into the sea.

Regional Briefs

Endangered Species Program regional staffs have reported the following recent activities in their areas:

Region 2. Representatives of the U.S. Forest Service and the Arizona Game and Fish Department at a recent meeting with regional personnel voiced support for a plan to reintroduce the Colorado squawfish (*Ptychocheilus lucius*) into the Salt River, Arizona. The plan also has been submitted to the White Mountain Apache Indian tribe. The upper portion of the river flows through the tribe's reservation.

Region 3. Jack Hemphill, director of the Service's six-state Region 3 since 1973, has retired from the Service. A veteran of 30 years in professional fish and wildlife management, on both state and Federal levels, Hemphill received Interior's Meritorious Service Award in 1973. He has worked to resolve the Minnesota wolf controversy and other Endangered species issues in the Great Lakes area, and cites the

laboring of Federal employees behind the scenes as the secret to effective government.

Region 4. An Endangered Species Notebook is being distributed within Region 4 to Federal and state offices needing current information on listed species and designated Critical Habitats. The notebook also contains information on species status reviews, proposed rulemakings, recovery teams, and other program materials.

Region 5. Contracts for status reports on the endangered flora of Virginia and New York State have been let to the Research Division of Virginia Polytechnic Institute and to the State University and Regents Research Fund, New York State Education Department.

Alaska Area. Previously unsearched areas of Alaska are being surveyed in an effort to locate new arctic peregrine falcon (*Falco peregrinus tundrius*) nesting areas. One new nest was found in a July 20-27 search along 40 miles of the Kogosukruk River. Several other nesting raptor species also were observed during the survey.

Tellico (continued from page 1)

feasible beneficial alternatives to developing the 38,000 acres of the Tellico project lands. Specifically, the report presents three basic options for completing the project:

1. Close the dam and form the reservoir as originally planned. Should this approach be adopted, "it will be necessary to secure the continued well-being of the snail darter by whatever means available," perhaps through transplantation.

2. Leave the dam in place, and build a dam and reservoir on the Tellico River tributary of the Little Tennessee. (This alternative does not warrant further study, according to the report, as it would add to the overall costs and produce very little benefits.)

3. Develop the river and surrounding project lands without creating a permanent reservoir. Two variations have been considered under this option: Use the dam for flood control purposes only, which would mean creation of a small, temporary reservoir, or, remove the earthen portion of the dam, allowing the river to return to its natural condition.

Another approach would be to pursue none of the "completion" options, but rather to remove the earthen portion and sell most of the land at the highest possible price. (On a net liquidation basis, this could result in a saving of \$30-50 million to the taxpayers, according to the report.)

Value Dilemma

In releasing the report, Assistant Interior Secretary Robert L. Herbst emphasized the difficulty in evaluating the benefits of the options now under consideration. "Even more elusive, and hence more frustrating, are those benefits which are of obvious and perhaps immense public value but for which there is no generally accepted measure of value."

TVA and the Interior Department will welcome comments on the report through September 10, 1978.

Murphy Heads New OES Program Branch

John M. Murphy, 31, has been appointed chief of the newly established Program and Administrative Services Branch in the Office of Endangered Species. A graduate of the University of Maryland in business administration, Murphy will coordinate development of the budget, program advice, and annual work plans for the program and act as administrative officer.

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Revised Wolf Control Measures Proposed By Service

(continued from page 1)

State (together with Isle Royale National Park in Michigan—see April 1978 BULLETIN). This ruling on March 9, 1978, also permitted designated employees or agents of the Service or Minnesota's Department of Natural Resources to take wolves from management zones 2, 3, 4, or 5 (see map) without a permit if they are "committing significant depredations on lawfully present domestic animals," so long as the wolves are taken in a humane manner.

Due in part to the sequence of events surrounding a situation of heavy wolf predation on a farm in northern Minnesota, however, it now appears that the March 9 regulations, as strictly interpreted, are not sufficiently workable to alleviate continuing predation problems. According to the Service, a more flexible approach may be necessary in areas where there has been "a highly unusual history of wolf depredation on livestock," and where it is apparent that "significant depredations will continue unless wolf numbers are reduced."

Farmer's Court Suit

Claiming the loss of substantial numbers of cattle on his farm (in zone 4) to predatory wolves, Julius Brzoznowski brought suit against the Department of the Interior in 1977, requesting relief and damages.

Following a February 1978 order from the U.S. District Court of Minnesota (Fifth District) to resolve the immediate problem of depredating wolves on the Brzoznowski farm, the Service found itself in a rather untenable position, in terms of its options under existing law. The Service, directed by Congress to promote the protection of listed species under the Endangered Species Act of 1973, was being directed by the court to provide for the control of specific depredating wolves and at the same time comply with the broader requirement stipulated by the court—that of minimizing, if not preventing, depredations on the Brzoznowski farm.

In early May, the Service—in line with the Minnesota court order—agreed to live-trap wolves in the vicinity of the Brzoznowski farm and translocate them to other parts of the State in hopes of minimizing further depredation. (Prior to this agreement, the Service was aware that five or more wolf packs were occupying the area around the farm.)

Recovery Team Advisory

On May 16, 1978, the wolf recovery



A gray wolf

Photo by L. David Mech

team advised the Service that in its opinion the translocation of captured wolves to other parts of Minnesota was "biologically unsound." It pointed out that areas of Minnesota which constitute the best wolf habitat already contain as many wolves as they can carry. To resolve the predation problem, the team recommended that the Service adopt its earlier suggestion, contained in the recovery plan, that the wolf population in zone 4 be held to 1 per 50 square miles by a regulated annual hunting and trapping season. (See accompanying story.)

The U.S. Forest Service also determined, and so advised FWS, that no additional live-trapped wolves could be released in the Superior National Forest after May 24, further recommending against the relocation of trapped wolves in any other areas.

Subsequently, on May 19, the Service issued a directive allowing a "special exception" in the case of wolves captured in the area of the Brzoznowski farm. Wolves could be taken and disposed of without translocation or

without prior evidence of livestock loss if the threat of livestock losses was imminent.

This exception became the focus of a second U.S. District Court action, filed on June 12 by the Fund for Animals, Inc., and other conservation groups, in which the plaintiffs contended that the taking of these wolves was in direct violation of the final regulations for wolf depredation control.

The court, in a decision handed down July 14, basically agreed with the conservationists in terms of the Service's policy under existing law and regulations. It said the effect of the Service's directive "is to remove all prohibition against the taking of any wolves except the animal or animals which are reasonably believed to be, or are likely to be, responsible for killing livestock. . . ."

The court has issued a permanent injunction barring the Service from trapping and killing wolves in management zones 2, 3, 4, and 5 "except when such action is necessary and is directed to the removal of a gray wolf or wolves when a reasonable cause exists to believe that said wolf or wolves have committed a significant depredation upon livestock lawfully present in said area," in line with the March 9 regulations.

In issuing the decision, the court commented in support of the Service's proposal to clarify its authority, noting that "lawful minimization of the conflict between this threatened species and the populace of northern Minnesota must be attained."

Proposed Provisions/Rationale

In full recognition of the different management programs presented in the recovery plan for the wolf as compared with this proposed ruling, the Service emphasizes that it has opted for a conservative approach in dealing with this highly charged issue. "We must move with great care in managing this species within one of its last

(continued on next page)

Timber Wolf Management Zones in Minnesota



Howard Associates Map

strongholds," cautions Keith Schreiner, Endangered Species Program Manager. "Despite the sound biological principles on which the recovery plan is founded, we do not know enough about wolf population dynamics to permit us to allow public hunting or trapping at this time. I would hope, however, that we can return this resident animal to the State for management in the not too distant future."

The proposed rule would allow the taking of wolves without regard to whether or not a particular wolf or wolf pack could be tied to an actual depredation or other conflict with human interests. Such taking would be permitted only upon published findings by the Service that:

1. In the recent past there have been unusually large numbers of wolf/human conflicts in a particular area.

2. Based on the numbers of wolves in a particular area, there is a substantial likelihood that unusually large numbers of such conflicts will continue if some wolves are not removed.

3. Wolves can be taken in the area without there being any adverse consequences to the wolf's numbers in the particular zone where the conflicts have existed.

The proposal states that taking authorized under these circumstances must be done in a humane manner and be conducted close to the affected area. Moreover, the taking must cease immediately when the Service is no longer able to meet the requirements of all the above three findings.

Under the proposal, the Service would not be committed to any single course of action with respect to the wolves it proposes to remove. "If translocation of some wolves is possible, in a sound, planned program, the attractiveness of that alternative is obvious."

While translocation within Minnesota is presently not sound, the Service said it would pursue the possibility of placing captured wolves in other states as recommended in the recovery plan. However, the Service recognizes there may be some time involved in gaining the necessary acceptance for such an action. Even if reintroduction is allowed, it is believed only a few wolves would be involved.

Some wolves may be relocated to zoos and research facilities. But the Service noted that the wolf breeds well in captivity and the demand from these quarters probably will be small in the long run.

Thus, for want of viable alternatives, the Service noted that some of the wolves taken in dealing with predation problems may have to be destroyed.

Comments on the proposal should be submitted to the Service no later than August 31, 1978.

Timber Wolf Recovery Plan Approved

A recovery plan calling for maintaining and reestablishing viable populations of the eastern timber wolf (*Canis lupus*) "in as much of its former range as is feasible" has been approved by the Service.

Most of the estimated 1,000 to 1,200 wolves remaining in the lower 48 states are concentrated in Minnesota, where the species recently was reclassified from Endangered to Threatened status (F.R. 3/9/78). Presently, the wolf is the subject of controversy on the issue of controlling depredations upon livestock in the northern part of the State (see accompanying story).

The recovery team, headed by Ralph E. Bailey of the Michigan Department of Natural Resources, has recommended steps to deal with the depredation problem and at the same time ensure perpetuation of the Minnesota timber wolf population at "levels optimum to the varying parts of its range." Optimum level, the team says "includes biological carrying capacity and compatibility with man."

Four main factors have been listed by the recovery team as critical to the wolf's long-term survival: (1) availability of adequate wild prey, (2) large tracts of land with low human densities and minimal accessibility, (3) ecologically sound management, and (4) adequate public understanding of wolf ecology and management. "If not for the human element, only the first factor would be significant to wolf survival," the team says.

The recovery plan divides the State into five wolf management zones and prescribes wolf population densities for each zone. The team recommends that complete protection be afforded the wolf throughout its primary range (zones 1, 2, 3). In zone 1, which includes Superior National Forest, wolf numbers would be allowed to fluctuate naturally. In zones 2 and 3, taking would be allowed in only specific cases of documented livestock depredation.

In these two zones, the plan notes that, during a series of severe winters, wolves can contribute to depletion of deer populations to the detriment of both species. In the event deer numbers fall below their ability to support optimum wolf density (one wolf per 10 square miles) over any three-year period, the team says consideration should be given to artificially reducing wolf numbers until the deer herd recovers.

In zone 4, where an increasing number of depredations by wolves have been reported recently, the plan recommends maintaining a wolf population of one per 50 square miles in forested areas to keep wolf/human conflicts at a minimum. Wolf and prey populations should be monitored and the harvest of prey species by hunting should be regulated to maintain the optimum wolf population goal. If wolf numbers increase in this zone beyond the suggested density, the recovery team recommends that the excess be reduced by carefully regulated hunting and trapping.

The team suggests that removal be performed in a November through January hunting season, and that the taking of one wolf per 200 square miles, or 100 wolves, be allowed during the first year of management. (The team assumes that an additional 60 wolves would be taken under a damage control program and another 60 wolves would be taken illegally, for an overall reduction of 220 in one year.) In subsequent years, the take would be adjusted up or down to maintain the optimum density.

Only a few wolves are believed to stray into zone 5, which covers the densely settled lower half of the State. Taking of wolves in this zone would be restricted to authorized Federal and State employees.

The plan also emphasizes the need for rejuvenating mature forests to improve habitat for deer. Conceding that such a plan could prove to be "extremely expensive," the recovery team notes that besides helping the wolf, such improvement would benefit many other species of wildlife, along with hunters and recreationists.

As another conservation measure, the plan recommends that consideration be given to reestablishment of the woodland caribou (*Rangifer tarandus*) in Minnesota's northern bogs to provide an alternate prey species for the wolf. The caribou was extirpated from the State about 1937, but considerable suitable habitat remains.

A concerted public information and education program is advocated to dispel "misinformation disseminated about the wolf by both pro- and anti-wolf advocates." Because the wolf is controversial, the team says local opposition can be expected to any efforts to reestablish the animal in parts of its former range in—and outside—Minnesota. Nonetheless, the team says all possibilities should be explored even if, upon investigation, reintroduction of the wolf turns out to be imprudent.

Mexican Duck Removed From Endangered List

The Mexican duck has been removed from the U.S. List of Endangered and Threatened Wildlife and Plants by the Service in a final rulemaking (F.R. 7/25/78) that becomes effective August 24.

The action is based upon recent status reviews conducted by Arizona, Texas, New Mexico, and the Service, which led to a finding that "Mexican ducks" in the United States are actually hybrids—crosses between true Mexican ducks recently reclassified as *Anas platyrhynchos diazi* and the common mallard (*Anas platyrhynchos*).

Furthermore, the Service said the review showed there were no threats to the continued existence of either the estimated 50,000 pure Mexican ducks in central Mexico or the 5,000 Mexican-like ducks occurring in Arizona, New Mexico, Texas and northern Mexico.

The Mexican duck was listed as Endangered in 1967. Two years ago, however, researchers discovered that the first so-called Mexican ducks collected in the United States and preserved in the Smithsonian Institution actually were genetic hybrids even though they looked like pure Mexican ducks.

(According to a 1977 opinion of the Department of the Interior solicitor, provisions of the Endangered Species Act of 1973 do not apply to hybrids, although the act does provide for the protection of specific geographic populations of species.)

Comments on Proposal

The Service's proposal to deregulate the Mexican duck, published in the *Federal Register* on March 31 (see April 1978 BULLETIN), drew a total of 21 comments. The proposal was supported by the States of Arizona, New Mexico, and Texas, which provided information developed by their biologists in recent years, and by the U.S. Forest Service and also the Bureau of Reclamation.

Deregulation also was backed by Dr. John Aldrich of Washington, D.C., who described the status of the Mexican duck for the "Red Book" (developed by the Committee on Rare and Endangered Wildlife Species, etc. 1965, 1966) on which the original listing by the Service was based. Aldrich said his finding of endangerment because of "drainage of suitable marsh habitat throughout range," which included central Mexico as well as the

border, plus hybridization with the mallard, was now "unjustified."

Opposition Views

The Bureau of Land Management, the Fund for Animals, the Environmental Defense Fund, and several scientists objected to the proposal. They raised questions which centered on the issue of whether the Mexican-like ducks along the border are phenotypes or a genotypically pure population deserving protection.

In response, the Service said the Mexican duck apparently exists in genotypically pure populations only in Mexico's central highlands. A large zone of intergradation between the mallard and pure Mexican ducks exists from northern New Mexico to southern Durango, Mexico, where the overall population of ducks in May 1978 was conservatively estimated at 5,000.

The Service said it recognized the scientific value of preserving populations of naturally interbreeding subspecies or species, but to be listed

for protection under the act, it must be shown that the entire population—and not just one phenotype—is in jeopardy. The Service said that the overall population of ducks in the zone is stable and is expanding into Arizona and Texas.

No Threat in Mexico

A survey in May and June of this year indicated a population in excess of 50,000 pure *A. p. diazi* in central Mexico, just prior to the nesting season. The Service said, "These ducks are also adapting to local agriculture practices, as in the United States, by feeding extensively in local farmlands. The ducks in this area, as elsewhere, are very wary and not easily approached. No threats to the continued existence of this population of ducks, or any significant segment of it, has been documented." Protection of *A. p. diazi* will continue to be provided under the Migratory Bird Treaty Act of 1918.

First Land Snails Receiving Protection

In issuing this final rulemaking on seven land snails, the Service has added the first U.S. snails to the U.S. List of Endangered and Threatened Wildlife and Plants (F.R. 7/3/78).

Two of the snails have been classified as Endangered, and the other five as Threatened. Each species or subspecies occurs in only one state, and all seven states involved are located in the eastern half of the United States.

Endangered Snails

The following two snails have been listed as Endangered, effective August 2, 1978:

Iowa Pleistocene snail (*Discus macclintocki*). With a population estimated at less than 100, this snail survives in a cave located in Bixby State Park, in northeastern Iowa. It is a unique relic of preglacial times (the species was first described as a fossil), having survived the Ice Age through living in Iowa's nonglaciated driftless area.

Survival of the species depends on continued maintenance of its habitat and protection from collectors (as the Service points out, simply by turning over the loose rocks in which the snail lives, one collector could render the species extinct in an afternoon).

The snail also is threatened by pre-

duction by beetles and also possibly by a toxic defoliant used in the general area.

In addition, in the past the state park has been subject to extensive vandalism. Recently, however, management of the park has been turned over to the government of Clayton County.

Virginia fringed mountain snail (*Polygyriscus virginianus*). The only known species in its genus, this snail inhabits a small area on a bluff overlooking the New River, opposite the industrial city of Radford in southwestern Virginia.

The continued existence of the snail population, which totals only a few hundred, is threatened by habitat alteration resulting from quarrying and future road construction activities.

Threatened Snails

The following five snails have been listed as Threatened, effective August 2, 1978:

Painted snake coiled forest snail (*Anguispira picta*). Found only in Buck Creek Cove, in Franklin County in south-central Tennessee, this species lives in an area subject to periodic lumbering. However, there is evidence that the snail cannot survive if its

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natural forest habitat is destroyed. In addition, overcollecting also represents a threat to the species.

The Service originally proposed Endangered status for this snail, but changed it to Threatened on the grounds that logging threats are not imminent.

Noonday land snail (*Mesodon clarki nantahala*). This snail occurs only in two upland localities in Swain County, in western North Carolina. The Service believes that widening of U.S. highway 19, as has been proposed, would destroy nearly all of the known colonies of the noonday land snail.

Stock Island tree snail (*Orthalicus reses*). Once found on several islands in the Florida Keys, this species is now restricted to Stock Island. It was extirpated elsewhere primarily by habitat alteration. The remaining population is threatened chiefly by real estate development, and also perhaps by livestock grazing and overcollecting.

Chittenango ovate amber snail (*Succinea chittenangoensis*), New York State population. This snail occupies a total area of less than 200 square feet consisting of spray zone talus and rocks beneath the Chittenango Falls in Madison County in central New York.

This habitat tends to be heavily trampled by human visitors to the falls. In addition, the snail suffers predation by introduced European snails, *Discus rotundatus* and *Oxychilus*.

Although common around the turn of the century, the snail has suffered a drastic decline in population in recent decades. Biologists believe this reduction to have been caused by pollution of the falls' spray.

Flat-spired three-toothed land snail (*Triodopsis platysayoides*). This species is limited to a small mountaintop in Monongalia County, in northern West Virginia. Between 300 and 500 snails live in isolated patches of deep undisturbed detritus and sheltered retreats on the summit, taking shelter among the boulders just below the summit during dry seasons.

The summit receives many human visitors (there is a concession stand located there), and the detritus is subject to being heavily trampled.

The Service originally recommended Endangered status for this snail, but subsequently opted for Threatened status because of the protection afforded the summit for being located in a state park.

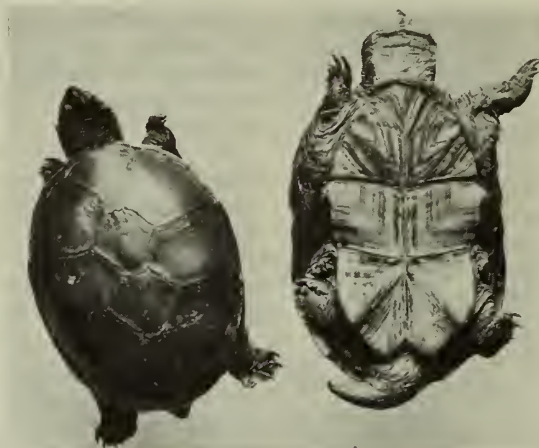
Background

On April 28, 1976, the Service issued a proposed rulemaking to list a total of 11 land snails as either Endangered

or Threatened.

Subsequently, the Service received comments from various Federal and state agencies, the Environmental Defense Fund, two private citizens, and several acknowledged snail experts.

All of the respondents expressed support for listing the seven snails included in the final ruling, although they differed in some instances as to the specific status best suited for each species or subspecies and the causes of decline or jeopardy.



Illinois Natural History Survey photo

A female Illinois mud turtle (at left) and a male of the species on his back.

Illinois Mud Turtle

The Service has issued a proposed rulemaking to add the Illinois mud turtle (*Kinosternon flavescens spooneri*) to the Endangered list and to designate the reptile's presently known range as Critical Habitat (F.R. 7/6/78).

Need for Protection

Formerly known to occur in several localities in Illinois, Iowa, and Missouri, the Illinois mud turtle is now limited to two areas—one in Illinois and the other in Iowa. The Illinois area is located in Mason County, in the west-central part of the State. The Iowa area lies in Muscatine and Louisa Counties, in the southeastern part of the State near the Mississippi River.

Proposed as Critical Habitat, both of these areas provide ponds and sandy terrain where the turtles can feed, hibernate, reproduce, and take shelter.

The chief threat to these populations—and the principal cause of the decline of other populations—is the adverse alteration of the natural habitat resulting from industrial, agricultural, and recreational activities.

In addition, the Service believes it likely that the turtle's survival may also be threatened by any or all of the following factors: collection of specimens by amateurs; predation by animals, especially during the turtle's nesting and incubation periods; chemi-

Based on comments received and other information, the Service decided to defer making a status determination for the other four species, pending acquisition of more comprehensive data.

Those four snails are Jones' middle-toothed land snail (*Mesodon jonesianus*), the Magazine Mountain snail (*Mesodon magazinensis*), the strange many-whorled land snail (*Polygyra peregrina*), and Pilsbry's narrow apertured land snail (*Stenotrema pilsbryi*).

cal pollution of the ponds; and water level fluctuations in the ponds.

Background

On June 6, 1977, the Service published a notice in the *Federal Register* announcing that it would undertake a review of 12 turtles, including the Illinois mud turtle (see June 1977 BULLETIN).

Subsequently, the Service received comments and other information on the Illinois mud turtle from both state government and private sources.

The Illinois Department of Conservation recommended Endangered status, noting that it was already in the process of preparing a proposal for submittal to the Interior Department.

The Missouri Department of Conservation wrote that the turtle was listed as rare by Missouri and expressed the view that it may well qualify for listing as Endangered.

Several professional biologists noted the turtle's apparent decline and present rarity, and those who commented on its prospective status all recommended Endangered listing.

Of particular value to the Service was an extensive report submitted by Lauren Brown and Don Moll of Illinois State University.

The Service took all of these comments into account when preparing the proposed rulemaking.

Comments Due

Comments from the public should be submitted by September 5; comments from the Governors of Illinois, Iowa, and Missouri should be submitted by October 5.

Ten Butterflies and Moths

The Service has issued a proposed rulemaking to list three butterflies as Endangered and seven butterflies and moths as Threatened, and to determine Critical Habitat for eight of the insects (F.R. 7/3/78).

The Service believes it is important to provide these species and subspecies with protection under the Endangered Species Act of 1973, in that their populations are small and/or decreasing and their habitats are threatened by the prospect of adverse modification or destruction.

Endangered Butterflies

Proposed for Endangered status are the following three butterflies:

Callippe silverspot butterfly (*Speyeria callippe callippe*). Found only on the San Francisco peninsula, this butterfly depends chiefly on perennial violets for its larval food. Urbanization and commercial development have destroyed the insect's habitat in the city of San Francisco and other places and pose a threat to its remaining range. Two localities in the Oakland zone of San Francisco County are proposed as Critical Habitat.

Palos Verdes blue butterfly (*Glaucopsyche lygdamus palosverdesensis*). The only known population inhabits several acres of fog-shrouded hillside on the Palos Verdes Peninsula in southern California. Accelerated urbanization is a major threat to the survival of the subspecies.

Pawnee montane skipper butterfly (*Hesperia pawnee montana*). The only known population occurs in a 12-mile-long stretch of canyon bottom along the South Platte River in Douglas and Jefferson Counties, in central Colorado. Completion of the Two Forks Dam would inundate 75 percent of the insect's total range, leaving only a few small colonies. The canyon has been proposed as Critical Habitat.

Threatened Butterflies and Moths

Proposed for Threatened status are the following seven butterflies and moths:

Blue-black silverspot butterfly (*Speyeria nokomis nigrocaerulea*). This butterfly is restricted to isolated areas in Arizona, Colorado, and New Mexico

(where it may already have been extirpated). Its habitat typically consists of spring-fed meadows or hillside seeps that support the insect's larval food plant, the violet. This habitat is being reduced by irrigation and other agricultural activities and also by road construction.

The area proposed for Critical Habitat contains a recently discovered colony and is located near Tsaile Creek, in northeastern Arizona.

Dakota skipper butterfly (*Hesperia dacotae*). Once prevalent in the North-Central States from North Dakota to Illinois and in Manitoba, this species has declined as the virgin tall-grass prairies have disappeared. Continued agricultural development, urbanization, quarrying, road construction, and water projects constitute a threat to the butterfly's remaining range.

Proposed as Critical Habitat are three localities in central and southwestern Minnesota.

Great Basin silverspot butterfly (*Speyeria nokomis nokomis*). This subspecies is limited to two localities in Mesa and Montrose Counties, in western Colorado, and also may be present in adjoining parts of Utah. The butterfly's existence depends chiefly on the presence of its larval food supply, violets, which in turn require a constantly moist habitat. Consequently, the butterfly is threatened by irrigation practices and other human activities that affect the available water supply. The localities in western Colorado have both been proposed as Critical Habitat.

Karner blue butterfly (*Lycaeides melissa samuelis*). Small populations of this subspecies are scattered across the Northern States (and Ontario) from Minnesota to Massachusetts. The butterfly is closely associated with areas of natural fire climax vegetation—so-called pine barrens areas—which support the wild blue lupine, its larval food supply.

Karner blue butterfly populations in the vicinity of large urban centers, such as Chicago and New York City, have been extirpated as a result of habitat destruction. Elsewhere, other populations are threatened by encroaching urbanization and also by suppression of the natural fire cycle, which in effect changes the habitat and makes it unsuitable for the wild blue lupine.

The area proposed for Critical Habitat, in Albany County, New York, contains the largest known karner blue butterfly population.

The butterfly is already protected by the State of New York.

Oregon silverspot butterfly (*Speyeria zerene hippolyta*). This species is found only in isolated salt-spray meadows along the coast of northern Oregon and extreme southwestern Washington. Real estate development is rapidly reducing this specialized habitat, and there are now only two known colonies of the subspecies that can be considered in good condition. Both of these are in Lane County, Oregon, and their sites have been proposed as Critical Habitat.

One of these sites, however, is privately owned and has been identified as the site of future condominiums.

Kern primrose sphinx moth (*Euproserpinus euterpe*). Formerly presumed to be extinct, this moth was rediscovered in 1975 in California's Walker Basin, located between the Greenhorn Mountains and Piute Mountains. The site is a 4,000-square yard area, most of which is occupied by a barley field on a cattle ranch.

Present management of the ranch does not appear to be a threat to either the moth or its larval food plant, a primrose. However, given the possibility of a change in management and the increasing interest of collectors, the species must be considered as vulnerable and in need of Federal protection.

San Francisco tree lupine moth (*Grapholitha edwardsiana*). Initially discovered in the 1880's, this species was thought to have become extinct by 1960. However, several small colonies were rediscovered in 1977 in the dune system of the San Francisco peninsula. Urbanization has destroyed most of the original dune ecosystem, and the areas proposed for Critical Habitat—both in San Francisco County—need to be preserved because they contain two of the three presently known populations.

Background

The Service published a notice in the March 20, 1975, issue of the *Federal Register* to announce that it was reviewing the status of 42 butterflies, including 4 covered by the present proposal.

Comments received by the Service on these 4 species and subspecies were as follows:

- The Iowa Department of Agriculture felt there is insufficient information to support either Endangered or Threatened status for the Dakota skipper butterfly.

- The Governor of Utah said that Federal action on the Great Basin silverspot butterfly should be deferred until a complete survey and habitat

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inventory have been taken, and that in the meantime Utah would act to protect the subspecies.

- Oregon State University's Department of Entomology recommended that Federal action be taken to preserve the needed habitat of the Oregon silverspot butterfly.

- The New York State Department of Environmental Conservation acknowledged that the Karner blue butterfly may warrant Endangered status.

In addition, the Service received petitions from several professional biologists to add the Karner blue butterfly and also the Kern primrose sphinx moth to the U.S. List of Endangered and Threatened Wildlife and Plants.

Comments Due

Comments from the public on the proposed rulemaking should be submitted to the Service by September 1; comments from the Governors of the states involved are due by October 1.

San Marcos Gambusia and Salamander

To help provide protection for a fish and salamander unique to a spring and its outflow in south-central Texas, the Service has issued a proposed rulemaking to add both species to the U.S. List of Endangered and Threatened Wildlife and Plants and to designate their common range as Critical Habitat (F.R. 7/14/78).

The two species are the San Marcos gambusia (*Gambusia georgei*), proposed for Endangered status, and the San Marcos salamander (*Eurycea nana*), proposed for Threatened status.

Their known range consists of San Marcos Spring together with the upper portion of its outflow, the San Marcos River, which are located in Hays County southwest of the city of Austin.

The future of the species' habitat is threatened by the prospect of reduced spring flow as a result of groundwater pumping from a nearby aquifer; it is estimated that, if the pumping continues, the spring will have only intermittent flow by 1985, likely resulting in the extinction of both species.

San Marcos Gambusia

The present population of the San Marcos gambusia is unknown. In 1969, biologists Clark Hubbs and Alex Peden estimated that less than 1,000 individuals survived. A 1974 survey, however, found only one individual fish, and surveys in 1976 failed to reveal the presence of even one. Some biologists now believe the species may be extinct.

The cause of the fish's decline has not been determined, but it appears

to be habitat-related; the severe flooding of the San Marcos River in May 1970 may have been a contributing factor.

The habitat areas known to be preferred by the species are shallows with muddy bottoms, weak currents, and constant temperatures and without dense aquatic vegetation. The feeding habits and requirements of the fish have not been fully determined.

Two other species of gambusia, *G. affinis* and *G. geiseri*, occupy the same bodies of water and are abundant.

San Marcos Salamander

Most of the San Marcos salamanders inhabit a relatively small area of the spring, where there are dense algal mats that provide them with cover and protection from predators as well as with abundant food (principally tenebrionid larvae and amphipods).

The species is apparently reproducing successfully, and currently the population is rather large and stable.

Nevertheless, anticipated changes in spring flow pose a major threat to the amphibian's limited habitat—and hence to the survival of the species itself.

Background: The San Marcos salamander was one of 10 amphibians identified for status review by the Service in the August 2, 1977, issue of the *Federal Register* (see September 1977 BULLETIN). Subsequently, the Service received comments on this particular species from the State of Texas and several professional biologists. All of the respondents supported listing the species as Threatened, and most of them also provided recommendations on Critical Habitat.

Comments Due

Comments from the public on this proposed rulemaking should be sent to the Service by September 15; those from the Governor of Texas are due by October 15.

Tecopa Pupfish

Based on its determination that the Tecopa pupfish (*Cyprinodon nevadensis calidae*) is now extinct, the Service has issued a proposed rulemaking to completely declassify this Endangered subspecies (F.R. 7/3/78).

Discovered and described by Robert R. Miller in 1948, the Tecopa pupfish was a tiny fish, only about 1.5 inches long, that lived in small pools and thermal springs located within the southern part of the drainage basin of the Amargosa River, near the town of Tecopa in southern California.

During the 1950's, construction of a bathhouse above one of the thermal springs resulted in the rechanneling

and combining of two spring outflows, which in turn created an alien habitat for the pupfish. In addition, recently introduced bluegills and other exotics began competing with the pupfish and preying on pupfish juveniles.

The combination of habitat alteration, competition, and predation caused such a marked decline in the Tecopa pupfish population that the subspecies was declared Endangered by the Service in 1970 and also was listed similarly by California.

The first status survey of the subspecies, conducted in 1972, failed to locate any populations in the Tecopa area. An extended survey by biologists from both California and Nevada between 1972 and 1976 was also unsuccessful. A third survey, covering a broader area, was conducted by the State of California in 1977 and resulted

Shoshone Pupfish

In its proposed rulemaking on the Tecopa pupfish, the Service also announced that a related subspecies, the Shoshone pupfish (*C. n. shoshone*), has also been determined to be extinct. The bases for this determination are the negative results of several surveys, culminating in the State of California's major survey of 1977.

Consequently, although the Shoshone pupfish was never listed as Endangered or Threatened, the Service proposes to preclude it from any further consideration under the Endangered Species Act of 1973.

in a determination that the Tecopa pupfish is extinct.

Consequently, the Service believes the fish should be declassified and thereby removed from any further consideration under the Endangered Species Act of 1973.

In announcing the proposed ruling Assistant Secretary of the Interior Robert L. Herbst noted that "the most depressing thing about this loss of life form is that it was totally avoidable. The human projects which so disrupted its habitat, if carefully planned, could have ensured its survival."

If the proposal is finally approved, it will mark the first time that an animal has been removed from the U.S. List of Endangered and Threatened Wildlife and Plants because it is presumed to be extinct.

Comments from the public on this proposal should be submitted to the Service no later than September 1; comments from the Governor of California are due by October 1.

Protection Extended To 3 More Sea Turtle Species

(continued from page 1)

Factfinding concerning these questions and the evaluation of data on the status of the species was complicated by an absence of clear jurisdictional authority between NMFS and FWS over sea turtles. This was resolved with the signing in July 1977 of a memorandum of understanding between the two Federal agencies.

Adequacy of Protection

In finalizing the new classifications for the three sea turtles, the Services said they were needed because existing regulatory mechanisms were inadequate. While nesting females, eggs, and young are often protected from commercial exploitation by state law, there is a lack of uniformity in local controls. Under the Convention on International Trade in Endangered Species of Wild Fauna and Flora, foreign commerce is prohibited as is the importing of turtles harvested outside the 3-mile territorial limit of the United States. But the rulemaking noted that not all countries trading in turtles are parties to the Convention, and the enforcement of various foreign laws protecting sea turtles is not consistent.

Increasing Pressure

Commercial exploitation of the three sea turtles (especially the green—regarded as perhaps the most commercially valuable reptile in the world), loss of nesting habitat through the development of beaches, and predation have created increasing pressure on their numbers in recent years. Turtle meat and turtle eggs are prized delicacies in many parts of the world and the demand has stimulated hunting, particularly for greens and olive ridleys.

Scientists believe large numbers of green turtles nested on Florida beaches up to the 20th century, but they have been nearly extirpated by hunting and condominium and apartment construction. The only remaining Florida population—totaling fewer than 100 mature adults—is known from the State's southeastern coast.

This stock has been declared Endangered because it is believed that any threat—exploitation, incidental take from fishing operations, or loss of habitat—could result in its immediate extinction.

Similarly, evidence submitted during the last comment period on the proposed rulemaking has documented the loss of green sea turtle nesting populations along the Pacific coast of Mexico and their overharvest in the Gulf of California, leading the NMFS and FWS to conclude that these populations could be in danger of extinction in three years. Based upon this evidence, these populations also have been listed as Endangered.

Evidence indicates that the annual take of sea turtles along the Mexican Pacific coast since the early 1960's has been 500,000 to 1 million turtles. An estimated 70,000 female olive ridleys were reportedly taken from a nesting population of 150,000 in Oaxaca State alone during 1977. The NMFS and FWS said that stock "is beginning to show the same signs of stress that existed with the Atlantic ridley in the 1950's" and may be beyond recovery in another eight years unless the pressure is relieved.

Generally, however, it appears that, while there have been drastic declines in certain populations of greens, loggerheads, and olive ridleys, there are no data to indicate that these sea turtle species as a whole are in danger of extinction within the foreseeable future throughout a significant portion of their ranges.

FINAL REGULATIONS

All of the issues discussed in the comments have been addressed in the final regulations, which differ in many respects from the proposed rulemaking. The following is a summary of the major provisions included in the final rulemaking.

Mariculture Prohibited

The proposed regulations contained a two-year exception for mariculture operations which were dependent upon wild turtles for eggs and brood stock. Thereafter, there would be an exception for trade in turtle meat and products produced in a closed-cycle operation of captive turtles. These products would be sold under permit on the condition that they would be marked or otherwise identified as to their source.

The Convention on International Trade generally prohibits trade in six major species of sea turtles or their products (placing lesser controls over trade in flat-back sea turtles and the

Australian population of greens). Cayman Turtle Farm, Ltd., and other mariculture operators had been granted an exception from this rule allowing trade in products of captive-bred animals.

After much consideration, NMFS and FWS decided not to allow any exception for mariculture in the final regulations. The services agreed with critics of the operation, believing that "little or no scientific benefit would be received, that the mariculture operations could not be monitored adequately, and that increased worldwide demand for sea turtle products would be encouraged." It is feared that such demand could inspire exploitation of wild stocks as well as poaching, both of which would work against the protective measures mandated under the 1973 act.

Regarding Cayman Turtle Farm, the two services said that, despite the past three years of experimentation, "we do not have sufficient evidence to indicate progress has been made, [and] it is questionable that they will reach the goal of 1980 indicated" when they could successfully raise turtles in a completely closed-cycle system. Cayman Turtle Farm is the largest known sea turtle mariculture operation in the world.

Incidental Catches

Most incidental catches of sea turtles are by shrimp trawlers. Of 46 comments received on the question of granting exceptions to such catches in the regulations, 13 registered opposition. Some felt that this type of taking is a major factor in the sea turtles' decline; others believed it would further jeopardize the potential recovery of the three species.

Some of those favoring exceptions claimed an outright prohibition could destroy the domestic shrimp industry. Concern also was registered over proposed restrictions on fishing in the turtles' "areas of substantial breeding and feeding."

In response, NMFS and FWS said incidental taking would be prohibited for sea turtles designated as Endangered, including the Florida and Pacific coast populations so classified in this ruling in accord with provisions of the Endangered Species Act. Exceptions will be allowed for Threatened populations of the three species subject to the following conditions:

- The taking is by fishing gear dur-
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ing fishing or research activities conducted at sea and not directed toward sea turtles.

- Any sea turtle so taken must be handled with due care to prevent injury to live sea turtles and must be returned to the water immediately whether it is dead or alive; if it is alive and unconscious, resuscitation must be attempted before returning a comatose turtle to the water.

- Any sea turtle so taken must not be consumed, landed, offloaded, transhipped, or kept below deck.

Developing Excluder Panel

At present no method exists to effectively prevent the accidental capture of a sea turtle in a shrimp trawl. However, NMFS is doing research on an "excluder panel" that could be fitted across the mouth of standard shrimp trawls to prevent, or substantially reduce, incidental catches. The \$500,000 research program is being conducted with the assistance of the shrimping industry, and NMFS hopes an acceptable panel design will be developed this year so that regulations can be drawn up to require the industry's use of the panel.

Other types of fisheries sometimes take sea turtles, but the mortality from these sources is believed to be low compared with that found during shrimp trawling. (The excluder panel would not be useful for turtle protection in non-trawl fisheries.)

As another conservation measure, NMFS and FWS are now considering areas where sea turtles are concentrated for designation as Restricted Fishing Areas or Critical Habitat. Incidental taking would likely be prohibited in these areas seasonally, and other protective regulatory controls may be imposed.

In addition, NMFS plans shortly to propose the Cape Canaveral ship channel in Florida as Critical Habitat for hibernating loggerheads and olive ridleys, which were discovered in the area last winter. (The channel may also be proposed for designation as a Restricted Fishing Area at a later date.) FWS is now preparing a proposal to designate primary nesting beaches as Critical Habitat for the green and loggerhead sea turtles.

The language "areas of substantial breeding or feeding" in respect to fishing restrictions was dropped from the final rulemaking. The two services agreed that it was too vague, unenforceable, and if strictly interpreted could put unnecessary restrictions on the shrimpers.

Subsistence Taking

The Governor of Hawaii asked for

an exception for subsistence taking of sea turtles, citing the adequacy of State regulations which allowed the taking of green sea turtles with a carapace length in excess of 36 inches for home consumption.

But in denying the exception, the services said they were concerned about a recent increase in the number of green sea turtle takings and the sale of turtle shell and other products in Hawaii to tourists.

In surveying other requests for subsistence exceptions, the Services decided to permit such taking only where it plays a major role in traditional native culture. The only individuals meeting this criteria were the natives of the Pacific Trust Territories, who will be allowed to take sea turtles for home consumption, but may not take nesting females or turtle eggs.

Other Exceptions

As for all Endangered species, the final regulations allow an exception for taking sea turtles for scientific, propagation, or survival purposes (according to detailed permit procedures).

Exceptions also are authorized under permit for zoological exhibition and educational purposes.

A final environmental impact statement on this action has been published by NMFS (c/o NOAA, U.S. Department of Commerce, Washington, D.C. 20230).

More Conservation Steps

In addition to the conservation steps outlined in the rulemaking, the two services are moving to protect sea turtle habitat along coastal waters of the United States and the shores of Caribbean islands, including recent proposals to list Sandy Point Beach on the western end of St. Croix as Critical Habitat for nesting leatherbacks (see the April 1978 BULLETIN) and to designate certain areas within the Commonwealth of Puerto Rico as Critical Habitat for the hawksbill (see June 1978 BULLETIN). FWS is now preparing a proposal to designate primary nesting beaches as Critical Habitat for the green and loggerhead sea turtles.

In late June, more than 100 representatives of Federal and state agencies, private industry, universities, and environmental organizations reviewed the draft of a comprehensive NMFS plan for the recovery and management of sea turtles in the western Atlantic and Caribbean. The plan is expected to be put into effect next year (see the July 1978 BULLETIN).

Officials are hopeful that these and future conservation measures will allow all species of sea turtles to survive and recover.

ENDANGERED SPECIES SCIENTIFIC AUTHORITY

Notices—August 1978

The Endangered Species Scientific Authority (ESSA) is responsible for the biological review of applications to import or export species listed in Appendix I, and to export species listed in Appendix II, of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Notices of the ESSA's findings are published in the Federal Register. Summaries of these notices are reported in the BULLETIN by month of publication.

Bobcat, Lynx, Otter, Ginseng '78-'79 Exports Proposed

The Endangered Species Scientific Authority (ESSA) has proposed findings on a state-by-state basis for export of bobcat, lynx, and river otter pelts taken in the 1978-79 season and for American ginseng roots harvested in 1978 (F.R. 7/7/78 and as revised in F.R. 8/7/78).

As the three furbearers and plant are protected under the Convention on International Trade, ESSA is responsible for determining that export of the four species—listed in Appendix II of the Convention—will not be detrimental to their continued survival.

In developing its proposal, ESSA considered a combination of biological information and management initiatives, as set forth in its April notice (F.R. 4/10/78). Approval of exports has been proposed (without quotas) for those populations of bobcat, lynx, and river otter in states meeting the minimum information requirements recommended earlier this year by the New Orleans Working Group, a body of 12 professional biologists headed by Dr. L. David Mech of the Fish and Wildlife Service. These requirements include population trend data, information on total harvest of the species, distribution of the harvest, and habitat evaluation. States also must have a management program which provides for a controlled harvest, registration and marking of pelts, and harvest level objectives determined annually.

Exceptions were made for some states which could not meet all of the requirements outlined, as ESSA considered other information to be sufficient for a finding of no detriment.

Bobcat/River Otter Quotas

For states which lack the legislative
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authority to limit bobcat harvests, ESSA proposed to approve export subject to Federal quotas, provided that the state wildlife agencies had implemented programs to evaluate the impact of harvests and were able to demonstrate that export subject to a quota for 1978-79 will not be detrimental to the survival of the species in the state.

ESSA said that only three state wildlife agencies now lack authority to limit bobcat harvests. (All have authority to regulate the harvest of river otters.) ESSA cautions that its proposed approval of limited quotas in these cases "should not be construed as a precedent for approval in the future."

Lynx Exports

ESSA also proposed to find in favor of exports of lynx pelts legally taken in four states—Alaska, Idaho, Minnesota, and Montana. Approval was withheld for a fifth state, Washington, until new information on lynx harvests is received.

Alaska had no export limitation for 1977-78, and reported a harvest of 1,620 lynx pelts. Idaho and Minnesota each had quotas of 25 and each reported harvests of 15 pelts. Montana's quota was 200, but only 24 lynx were reported taken, due to the severe winter weather.

Ginseng Exports

American ginseng is found in 32 states in the eastern half of the country and in adjacent Canada. About 12 states provide most of the harvest of roots, both cultivated and wild. Total exports for 1977 have been valued at over \$26 million.

ESSA said there are conflicting opinions about the status of wild American ginseng; many botanists, state and Federal officials, and a few collectors and dealers believe that the plant is endangered or rare, while others—mostly collectors and dealers—contend that the plant's status is stable or improving.

For the 1978 harvest, ESSA proposed to limit export approval to six states which regulate harvests or have conservation programs for the plant. These states and their reported 1977 harvests are Kentucky (52,700 pounds), Maryland and Michigan (no figures available), Missouri (6,100 pounds), North Carolina (16,615 pounds), and West Virginia (20,385 pounds). As with the furbearers, ESSA cautions that a finding in favor of exports of this year's harvest should not be considered a precedent.

Proposed findings and quotas for the bobcat and river otter are summarized in the accompanying table.

Comments on the proposed findings were due August 23, 1978.

FINDINGS FOR BOBCAT, RIVER OTTER									
State	Bobcat				1978-79 Findings	River Otter			
	1977-78 Quota	1977-78 Harvest	Report Sources			1977-78 Quota	1977-78 Harvest	Report Sources	1978-79 Findings
Ala.	4,000	NC			NDR	1,500			NDR
Alaska	(not present in State)					open 1,981		TR(90%)	A
Ariz.	8,000	4,992	ET		A	(protected in State)			
Ark.	3,000	NC	DR		IDR	400	NC	DR	IDR
Calif.	6,000	5,111	ET		A	(protected in State)			
		15,000	HS('77)						
		208	ADC						
Colo.	4,000	1,300	ET		IDR	(protected in State)			
Conn.	(protected in State)					100	63	ET	A
Del.	(not present in State)					60			NDR
Fla.	3,500	678	DR		A	6,000	1,707	ET	A
		983	ET				3,326	DR	
Ga.	4,000	2,793	DR(93%)		A	4,000	3,097	DR(93%)	A
Hawaii	(not present in State)					(not present in State)			
Idaho	1,475	776	ET		A	(protected in State)			
Ill.	(protected in State)					(protected in State)			
Ind.	(protected in State)					(protected in State)			NEA
Iowa	(protected in State)					0			
Kans.	none set 2,145 TS				A	(protected in State)			
Ky.	(protected in State)					(protected in State)			
La.	4,000				NDR	7,500			NDR
Maine	500	389	TR, HR		A	600	675	TR	A
Md.	(protected in State)					165			NDR
Mass.	50				NDR	68			NDR
Mich.	350	331	TR, HR		A	810	660	TR	A
Minn.	150	103	TR, HR		A	700	492	ET	A
		86	ET						
Miss.	4,000	NC			IDR	350	NC		IDR
Mo.	(protected in State)					(protected in State)			
Mont.	1,070	636	TR, HR		A	36	40	TR	A
Neb.	400	94	ET		A	(protected in State)			
		112	ET + Res.						
		200	TS(ADJ)						
Nev.	2,225	1,795	TS(63+%)		A	0			NER
		2,225	ET						
		2,818	TS(ADJ)						
N.H.	(protected in State)					200	NC	TR	IDR
N.J.	(protected in State)					(protected in State)			
N.M.	6,000	4,416	ET		Q: 6,000	(protected in State)			
		4,606	TS						
N.Y.	225	74	TR, HR		A	700	467	TR	A
		80-90	TR, HR				500±20	TR	
		20	ET						
N.C.	800	800	ET		A	1,200	1,200	ET	A
		593	DR				927	DR	
N.D.	165	61	ET		A	(not present in State)			
Ohio	(protected in State)					(protected in State)			
Okla.	0	2,459±30	DR		A	(protected in State)			
Ore.	3,000	2,930	ET		A	335	300	ET	A
		NC	TR, DR, HR						
Pa.	(protected in State)					(protected in State)			
R.I.	(protected in State)					15	15+	TR(50%)	A
S.C.	(sale of pelts illegal 77-78)					650	8	ET	NDR
S.D.	500	84	TR, HR		A	(protected in State)			
Tenn.	1,000	597	ET		A	(protected in State)			
		800	ET(ADJ)						
Tex.	10,000				IDR	0			NER
Utah	(protected in State)					(protected in State)			
Vt.	200	82	TR, HR		IDR	50			NDR
Va.	1,500				NDR	585			NDR
Wash.	6,000	2,700	TR, HS		A	770	760	TR	A
		1,481	ET				538	ET	
W. Va.	500	535	TR, HR		A	(protected in State)			
		150	ET						
Wis.	300	163	TR, HR		A	1,200			NDR
Wyo.	2,000				NDR	(protected in State)			
Navajo Nation	500	7	ET		A	(not present)			
		77	ET, ADC, TR						
Reporting symbols: NC=not compiled; ET=export tag; DR=dealer report; HR=hunter report; TR=trapper report; TS=trapper survey; ADC=animal damage control; ADJ=adjusted to account for incomplete reports									
Finding symbols: A=approved; IDR=incomplete data received; NDR=no data received; NER=no report requested; NEA=no export approved; Q=quota									

Pending Rulemakings

The Service expects to issue rulemakings and notices of review on the subjects listed below during the next 90 days. The status or action being considered for each final and proposed rulemaking is given in parentheses.

The decision on each final rulemaking will depend upon completion of the analysis of comments received and/or new data made available, with the understanding that such analysis may result in modification of the content or timing of the original proposal, or the rendering of a negative decision.

Pending Final Rulemakings

- 6 butterflies (C.H.)
- Grizzly bear (C.H.)
- 13 crustaceans (E, T)
- Black toad (T, C.H.)
- 2 zebras (E)
- 12 Western snails (T)
- 2 big-eared bats (E)
- 3 Ash Meadows plants (E)
- 5 plants (E)
- 6 San Francisco Bay Area plants (E, T)
- 2 California plants (C.H.)
- Leatherback sea turtle (C.H.)
- 2 North Carolina plants (E, T)
- 2 cacti in Colorado and Utah (E)
- Dinosaur milk-vetch in Utah (E)

Pending Proposed Rulemakings

- 10 North American beetles (E, T)
- 2 harvestment (E, T)
- 3 mussels (C.H.)
- Rocky Mountain peregrine falcon population (C.H.)
- Colorado squawfish (C.H.)
- Virgin River chub (E, C.H.)
- Desert tortoise (Beaver Dam slope population) (E, C.H.)
- Unarmored threespined stickleback (C.H.)
- Puerto Rican whip-poor-will (C.H.)

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	33	227	260	3	18	21
Birds	67	144	211	3		3
Reptiles	11	47	58	9		9
Amphibians	5	9	14	2		2
Fishes	29	10	39	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	15		15	2		2
Total	192	440	632	38	18	56

Number of species currently proposed: 141 animals
1,850 plants (approx.)

Number of Critical Habitats proposed: 56

Number of Critical Habitats listed: 29

Number of Recovery Teams appointed: 63

Number of Recovery Plans approved: 18

Number of Cooperative Agreements signed with States: 22

July 31, 1978

- Laysan duck (C.H.)
- Whip-scorpion (E, C.H.)
- Valdina Farms salamander and isopod (E, C.H.)
- 2 plants (E) and 6 plants (C.H.)
- 20 Appendix I spp.
- Cui-ui (C.H.)
- Whooping crane (C.H.—additional areas)
- Bolson tortoise (E)
- Coachella Valley fringe-toed lizard (T, C.H.)
- 7 Oregon freshwater fishes (E, T, C.H.)
- Light-footed clapper rail (C.H.)
- Yellow-shouldered blackbird (C.H.)
- Virginia fishes (T, C.H.)
- 3 Texas fishes (E, T, C.H.)
- Leopard (reclassification to T)
- 4 Yaqui River fishes (E, C.H.)
- Southeastern fishes (E, T, C.H.)
- Green sea turtle (C.H.)
- Gray bat (C.H.)
- Columbian white-tailed deer and Sonoran pronghorn (C.H.)
- Warner sucker, Oregon (E, C.H.)

- 4 fishes in Kansas, Missouri, and Arkansas (T, C.H.)

Pending Notice of Review

- Desert tortoise

Abbreviations: E=Endangered, T=Threatened,
C.H.=Critical Habitat

New Publications

Two reports have been issued by Canada's National Museum of Natural Sciences. They are "The Rare Vascular Plants of Alberta," by George W. Argus and David J. White, and "The Rare Vascular Plants of Nova Scotia," by Robert V. Maher, David J. White, George W. Argus, and Paul A. Keddy.

Copies may be obtained from the Botany Division, National Museum of Natural Sciences, Ottawa, Ontario K1A 0M8.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

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ENDANGERED SPECIES TECHNICAL BULLETIN

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Amended Regulations Proposed To Allow More Cooperative Pacts With States

The Service has proposed revised regulations to carry out a change in the Endangered Species Act of 1973 that is designed to facilitate the participation of more states in the cooperative agreement program.

The proposal (F.R. 8/30/78) concerns the alternative set of eligibility requirements provided for under an amendment to section 6 of the law and signed by President Carter on December 19, 1977. These alternate requirements may be applied by any state possessing authority for the management of some, but not all, federally listed species resident in the state to enter into a cooperative agreement with the Service and receive Federal grant-in-aid funds for its endangered species program.

For example, a state fish and wildlife conservation agency may have authority to protect only certain categories of federally listed species, such as vertebrates, rather than all listed resident species (which could include insects, mollusks, or other invertebrates). Under the original law, the agency could not meet the requirements of section 6, which specified that state agencies must have authority to conserve *all* federally listed Endangered or Threatened species.

As provided in the amendment, a state may now be considered eligible for cooperative agreements if it satisfies paragraphs 3, 4, and 5 under the existing section 6(c), and if it also has plans to give immediate attention to federally listed species that the Service and state agency agree are "most urgently in need of conservation programs. . . ." (Paragraphs 3, 4, and 5 require the states to have authority to investigate the status of resident wildlife, acquire habitat, and provide for public participation in the listing of resident species if they have a listing function.)

In its new proposal, the Service has proposed the following criteria for determining which listed species are most urgently in need of a conservation program:

1. The degree of threat to the continued existence of the species.
2. The species' recovery potential.
3. The taxonomic status (e.g., giving full species priority over subspecies or populations).
4. Such other relevant biological factors as determined appropriate.

The proposal also provides for appropriate rewording of all existing regulations pertaining to cooperative agreement eligibility and responsibilities to bring the regulations into line with the amendment. States that already have broad authority and wish to conserve all federally listed resident species may still do so and will remain eligible for cooperative agreements now in force.

To further improve program administration, the Service also is proposing to allocate Federal grant-in-aid funds on a semiannual basis. This would replace the present system of allotting funds only once a year.

Comments on this proposal from the public and Governors of all states are due by October 20, 1978.

Critical Habitat Set For Two California Plants

A 60-acre remnant of the Antioch Dunes in Contra Costa County, California, has been designated as Critical Habitat for two Endangered plants—the Contra Costa wallflower (*Erysimum capitatum* var. *angustatum*) and the Antioch Dunes evening primrose (*Oenothera deltoides* ssp. *howellii*)—in a final rulemaking issued by the Service (F.R. 8/31/78).

The ruling, effective October 1, 1978, will benefit other species of plants and insects, including the Endangered Lange's metal mark butterfly (*Apodemia normo langei*), that also reside in the dunes. In its larval stage, Lange's metal mark feeds solely upon wild buckwheat (*Eriogonum latifolium auriculatum*) growing on the dunes. A Critical Habitat determination for the butterfly is pending.

The dunes formerly covered 500 acres, extending for about 3 miles parallel to the Sacramento-San Joaquin Rivers and averaging one-quarter mile in width. Much of the dunes have disappeared because of sand mining and rototilling for fire control. Both the wallflower and evening primrose require areas that have not been invaded by weedy exotic plants, and the primrose in particular can thrive only in open sands.

(continued on page 9)



Members of a Corps of Engineers survey crew and the Service confer near the place where Endangered Higgins' eye pearly mussels have been found. (See story on page 3.)

Photo by Dona Finnley

Puerto Rico Expands ES Protection Program

A new ranger corps has been enlarged by Puerto Rico's Department of Natural Resources to enforce strengthened wildlife regulations and promote the protection of endangered species.

Created in 1977 with 80 rangers sworn into service, the corps recently was doubled in size by the assignment of 84 more rangers to the department's district offices. The corps was authorized by the enactment in 1976 of a new wildlife law by the Commonwealth's legislature.

This law also provides for new hunting regulations that specifically protect endangered amphibians and reptiles—species previously lacking protection under Commonwealth law.

Ranger Patrols

Part of the ranger force has been stationed on Mona and Culebra islands, which are under Commonwealth

jurisdiction. The rangers are patrolling the beaches to protect nesting Endangered hawksbill (*Eretmochelys imbricata*) and leatherback (*Dermochelys coriacea*) sea turtles from any human depredation of eggs and nesting females. The rangers also are controlling recreational usage of Mona Island to protect the Threatened Mona ground iguana (*Cyclura stejnegeri*). The iguana nests in the lowlands, which have become prime areas for campsites and vehicular traffic.

Hunting Restrictions

To reduce the impact of hunting on federally listed Endangered species, the department has created a buffer zone around the habitat of the Puerto Rican parrot (*Amazona vittata vittata*) that is closed to the shooting of pigeons and doves. All hunting has been prohibited in the habitat of the

Puerto Rican plain pigeon (*Columba inornata wetmorei*).

In addition, hunting has been closed for three species of waterfowl listed as endangered by Puerto Rico—the Bahama pintail (*Anas bahamensis bahamensis*), the ruddy duck (*Oxyura jamaicensis*), and the purple gallinule (*Porphyryla martinica*).

Federal Aid

The department, established in 1973, has been employing Federal Aid in Wildlife Restoration (Pittman-Robertson) funds for endangered wildlife planning, research, and management. Currently, it is progressing toward compliance with the requirements for a cooperative agreement with the Service to receive Federal grant-in-aid matching funds for endangered species conservation.

Endangered species "watchlists" for both animals and plants have recently been completed with the assistance of other Commonwealth and private organizations. The lists are used by the department in setting priorities for management and research.

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Regional Briefs

Endangered Species Program regional staffs have reported the following recent activities in their areas:

Region 2. The regional office reports that the status review of the Houston toad in Harris County, Texas, has been received. According to the study, no specimens were found, despite an intensive search for both adult and young toads.

Region 3. A booklet entitled "Bald Eagle Production in the Great Lakes States 1973-77" has been developed by Carl Madsen. Copies may be obtained by writing to the Twin Cities regional office.

Region 4. Final arrangements have been made to award contracts for status reports on 104 plant species within the region. These contracts have been designed to include surveys of five national wildlife refuges, as well as to provide information for the management of any candidate species that may be present.

Region 5. Contracts have been awarded for undertaking status reviews of the endangered flora of Pennsylvania, West Virginia, and Delaware.

Corps/Service Cooperate To Protect Endangered Mussels

One evening in early August, Jim Engel found a message awaiting him at home to call Sam Fuller at once, no matter how late the hour. Engel, the U.S. Fish and Wildlife Service's Region 3 endangered species specialist based at Minneapolis-St. Paul, imagined what the call was about before he picked up the telephone. There had been other urgent calls like this one from Fuller—all concerning new finds of endangered mussel specimens in the upper Mississippi River system. A malacologist with the Academy of Natural Sciences of Philadelphia (ANSP), Fuller has been surveying portions of the river's navigational channel scheduled for dredging by the U.S. Army Corps of Engineers. Under a unique contingency plan agreed to by the Corps and the Service, Fuller has instructions to call Engel and Corps officials as soon as endangered mussels are located, so that measures can be taken to protect them from the dredges.

On this occasion, Fuller informed Engel that he had found five Endangered Higgins' eye pearly mussels (*Lampsilis higginsi*) in the St. Croix River near the Hudson (Wisconsin) railroad bridge (about 25 miles upstream from where the St. Croix joins the Mississippi). The five specimens had been taken from a pool not far from where Fuller's crew discovered two other Higgins' eyes in 1977.

Under the contingency plan, dredging scheduled for this site would be temporarily stayed to prevent the imminent destruction of protected mussels while permitting an evaluation of the effects of dredging and the consideration of available alternatives.

In Effect Since 1977

Essentially, the agreement is an interim approach to promoting Corps compliance with Section 7 of the Endangered Species Act of 1973—a provision that requires all Federal agencies to insure that their actions do not jeopardize Endangered or Threatened species or destroy or modify habitats considered to be critical to the species' continued existence.

In effect since the culmination of the survey in June 1977, the contingency plan is representative of the Corps' comprehensive effort to study Endangered mussels of the upper Mississippi to insure that channel maintenance will not have an adverse impact on any listed species or subspecies.

Jack Hemphill, former Twin Cities regional director for the Service, considers the actions of the Corps' St. Paul District since initiating consultation in January 1977 as exemplary: "In view of the potential ramifications this particular consultation presented, and the results accruing from the cooperative effort, I believe this consultation should serve as a model of how section 7 of the act should be administered."

The Corps of Engineers has been dredging the upper Mississippi to maintain a 9-foot navigational channel for over 50 years. Estimates put last year's river traffic in commercial cargo in the district at nearly 20 million tons, both up- and down-bound. During its 220-day navigational season, the Corps dredges an average of 6 percent of the 284 river miles in its St. Paul District. Some 20 sites must be dredged either annually or every other year to clear a path for the continuous flow of such commodities as coal and grain, commonly shipped by barge.

Source of Controversy

In 1976, a few months after the Higgins' eye and fat pocketbook (*Proptera capax*) pearly mussels were listed by the Service as Endangered (F.R. 6/14/76), a private citizen complained that the Corps' dredges had killed a Higgins' eye in the Mississippi River's east

channel at Prairie du Chien, Wisconsin. She charged the agency with violating section 7.

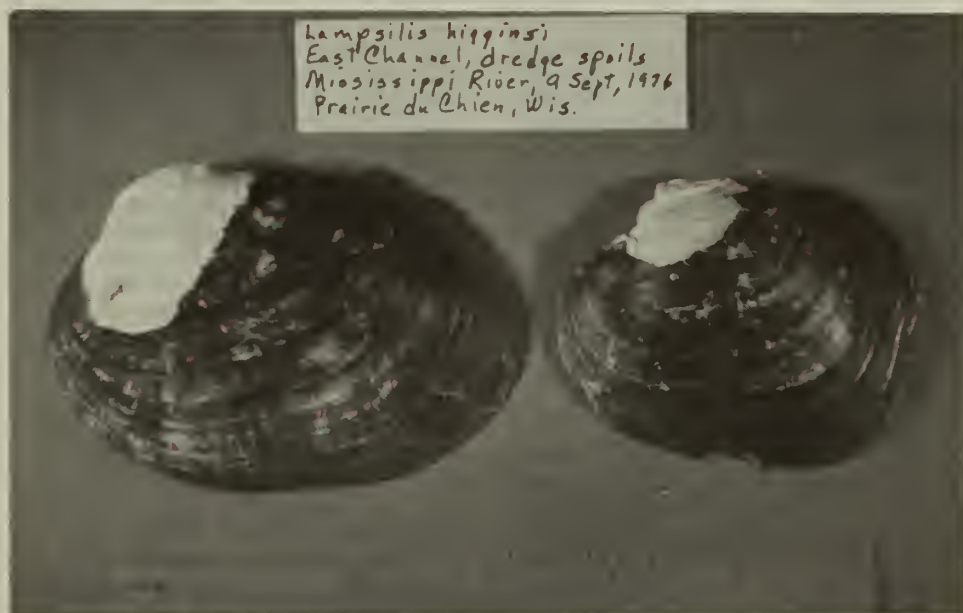
Prior to the complaint, and even prior to the final listing of the species, the Corps had met with the Service, local government officials, and concerned citizens to notify them of its intent to dredge the channel and to discuss possible impacts. The Great River Environmental Action Team (GREAT), an interagency group of Federal and state representatives (see accompanying story), consulted commercial clambers to determine locations of clam beds and, in July 1976, visited the sites. This resulted in a modification of the dredging design to reduce the possibility of damage to known or suspected clam beds.

Following its review of the proposed operations, the Service determined that reasonable precautions were being taken by the Corps to insure that endangered mussels would not be jeopardized.

Study Launched

But the incident showed that knowledge of the status and distribution of the Higgins' eye was very limited, as was information on the abundance, distribution, and ecological requirements of the other 48 mussel species and subspecies known in the upper Mississippi. Accordingly, in keeping

(continued on next page)



These Higgins' eye specimens—chipped from a dredge pipe in the Mississippi River's east channel near Prairie du Chien—prompted Marian Havlik to charge the Corps of Engineers with a Section 7 violation

Photo by Joseph F. Havlik

with its section 7 responsibilities—and as a key member of the GREAT seeking to restore the river's multiple wildlife and recreational resources—the Corps decided to undertake a comprehensive study of freshwater mussel ecology to determine the effects of dredging and channel maintenance.

The need for the study was further

underscored by a threshold examination conducted in February 1977 by the Service (following the initiation of formal consultation by the Corps), which concluded that:

- Maintenance dredging may jeopardize the continued existence of the species and/or adversely modify the habitat that may be determined critical to the species.
- Sufficient information did not exist

at the time to determine Critical Habitat for the species.

• To make a biological judgment as to whether or not maintenance dredging would modify the Critical Habitat, it would be necessary to determine the location and extent of existing clam beds. Further, to determine whether maintenance dredging has jeopardized the continued existence of a species, it would be necessary to understand the effects of siltation on mollusks.

Dredging Effects "Minor"

The independent 2-year study effort—designed with the assistance of the Service, the States of Wisconsin and Minnesota, and the ANSP—was started in mid-July 1977 by Fuller, a recognized authority on mussels, under a contract with the Corps. Working through mid-November, Fuller surveyed 46 sites that had a history of dredging or were scheduled for dredging, including 42 sites on the upper Mississippi, 3 on the Minnesota River, and 1 on the St. Croix River, with cursory examination of a dozen additional locations.

At each sampling site, observations were made on its physical and biological condition, on the nature of the mussel community, and on the possible effects of channel maintenance.

After the first year of study, investigators tentatively concluded that channel dredging and associated activities "have only a minor impact on freshwater mussels, including the legally protected species" and that with careful planning the impact could continue to be minor. For example, Fuller noted that the two Higgins' eye specimens found in the St. Croix River during the study were only a few meters from where the navigational channel had been dredged in 1970, yet both were old enough to have been there prior to that time.

Confirmed adverse effects of dredging on *Lampsilis higginsii*, the study reported, were found only at Prairie du Chien, where 21 specimens had been lost in dredging operations, and on the Mississippi at Brownsville (Minnesota), where one juvenile specimen had been located.

But the study cautioned that, unless care was exercised in the removal of materials from the channel and in its deposition on spoil banks along the river, mussels could be adversely affected. The potential impacts include direct destruction of the animals by the dredges' cutterheads and subsequent transport through pipes to a new location; the burial of mussels under dredged deposits; and, increased turbidity and pollution through the resuspension of heavy metals and other

(continued on next page)

Great River Studies Striving To Conserve Fish and Wildlife

Preservation of endangered freshwater mussels is one of many concerns of the Great River Environmental Action Team (GREAT)—a Federal/state interagency body that is performing intensive studies of the upper Mississippi River.

GREAT was created in 1974 under the auspices of the Upper Mississippi River Basin Commission to investigate environmental concerns arising out of the dredging and maintenance of the 9-foot navigational channel by the U.S. Army Corps of Engineers from New Orleans to Minneapolis-St. Paul. Approximately 1 million cubic yards of sediment are removed from the river system annually and deposited in shallow backwater areas, on natural islands, or on spoil banks along the river.

Numerous wing dams have been constructed by the Corps at right angles to the river to control water flow. There also has been a considerable amount of construction and dredging by private interests.

These manmade changes have greatly altered the character of the river since 1924, when Congress proclaimed "navigation" as the river's primary purpose. That same year, Congress also established the Upper Mississippi River Wild Life and Fish Refuge, near Wabasha, Minnesota, but stipulated that operation of the 195,000-acre refuge was not to interfere with the operation of the 9-foot navigational channel.

Over the years, however, conservation organizations, officials of states adjoining the river, biologists, and interested individuals have become increasingly concerned about the river's alteration. Their campaign to give equal attention to such other aspects as fish and wildlife, recreation, wilderness areas, water quality, and flood plain management has led to the formation of GREAT.

The interagency team is made up of appointed representatives from the States of Wisconsin, Minnesota,

Illinois, Missouri, and Iowa. The five Federal agency members are the Fish and Wildlife Service, the Corps of Engineers, the Department of Agriculture's Soil Conservation Service, the Environmental Protection Agency, and the U.S. Coast Guard.

Congress has appropriated nearly \$10 million for a series of studies by GREAT from fiscal year 1975 through fiscal year 1979. These studies have been broken down geographically into three phases and cover every aspect of the river system's resources and management. GREAT I extends from Minneapolis-St. Paul south to Guttenberg, Iowa; GREAT II stretches from Guttenberg to Saverton, Missouri; and GREAT III covers the system from Saverton to the mouth of the Ohio River at Cairo, Illinois.

The main stem of the Mississippi, which drains 1.5 million square miles of land covering 31 states and two Canadian provinces, is the largest environmental "corridor" in the United States sustaining abundant fish and wildlife resources. But GREAT studies are showing that the biological productivity of the upper Mississippi is being threatened in a number of ways.

Continuing sedimentation is filling lakes, marshes, and backwaters. The disposal of dredged materials in some instances has resulted in the conversion of productive fish and wildlife habitat into relatively sterile open sand areas. Some backwaters created by the construction of dams and the diking effect of spoil banks formerly provided rich habitat for mammals, fish, and waterfowl. But now many of these same areas appear to be dying for lack of fresh water and for other complex ecological reasons.

It is disturbing problems like these, along with the conservation of fish and wildlife resources in the river's mainstream, that the GREAT studies are striving to correct before it is too late.



Photo by Dona Finnley

Mussels (continued from page 4)

toxic materials when the river bottom is disturbed.

Turbidity reduces light penetration, decreasing the productivity of microorganisms upon which mussels feed, according to Fuller. Associated suspension of fine particles also may interfere with the animals' feeding and respiration by clogging their gills.

(Under agreement with the Minnesota Pollution Control Agency, the Corps is now studying the effects of turbidity, in terms of duration and extent of dissipation, and is attempting to determine the degree and nature of chemical pollutants resuspended during dredging.)

Project investigators also noted that backwater areas created by spoil deposits since 1924, when Congress authorized maintenance of the navigational channel, serve as prime nursery

This sampling of freshwater mussels was pulled from the St. Croix River by Samuel Fuller just below the Hudson (Wisconsin) railroad bridge (in background), where he previously found six Endangered Higgins' eye pearly mussels. The mussels are clinging to a device known as a brail, which Fuller's crew has used extensively in its survey of dredging sites along the upper Mississippi River navigational channel for the U.S. Army Corps of Engineers.

The brail consists of a 10-foot wooden bar equipped with a number of 10-inch chains from which are suspended bunches of hooks. The hooks are straight wire tines of different gauges (to accommodate various sizes of mussels) tipped with balls of solder. The bar is designed to float above the riverbed while towed from a small boat, allowing the hooks to graze the bottom. As a hook passes between the open valves of a mussel, the animal clamps shut on it and is pulled along by the motion of the brail and boat.

In Fuller's brailing runs, the device is towed downstream for five minutes, then lifted into the boat so that specimens can be removed. Several 5-minute runs covering about 500 feet are made at each survey site, generally about 50 feet from the shoreline.

Mussels also are retrieved in the survey by pollywogging—wading offshore and collecting by hand; by scooping them up in a wire mesh box called a Needham scraper (useful for finding juveniles too small to be caught by brailing); and by hard-hat HOOKAH diving. The latter technique permits the visual examination of suspected endangered mussel beds without disturbing them.

(continued on next page)



Photo by Dona Finnley

Daniel J. Bereza, assisting Sam Fuller in the survey project, holds two specimens believed to be Higgins' eyes

Mussels (continued from page 5)

and breeding grounds for several mussel species and their host fishes, and may need special protection.

Restrictive state laws now preclude the open water dumping of dredge spoils along the upper Mississippi. Disposal is now generally made in consultation with states and other concerned agencies and organizations. Although so-called spoil islands are the primary dump sites, spoil is often used as landfill, for sanding icy roads, or as blacktopping.

Siltation Study

Another study—performed in 1977 by the Service under contract with the Corps—indicates mussels are capable of surviving burial under dredged silt to some degree.* Researchers demonstrated this by burying fat mucket (*Lampsilis radiata luteola*) and pocketbook (*L. ventricosa*) clams in sediment from 2 to 10 inches in depth. They found that 7 inches or more of sand or silt was required to prevent the emergence of the two species, while 4 inches of silt was sufficient to kill 50 percent of the smaller pigtoe (*Fusconaia flava*) clams.

Declining Populations

The Fuller study reveals that all species of mussels have suffered a decline

in abundance in the upper Mississippi River over the past 75 years. (An exception is the mapleleaf—*Quadrula quadrula*—which has apparently managed to flourish by exploiting the impounded backwater areas.) There was no evidence of mussels in the lower Minnesota River, where they were abundant in the late 19th century.

Fuller attributes the sharp drop in numbers of several species, including the Higgins' eye, partly to excessive commercial exploitation by the pearl button industry, which used mussel shells to make buttons around 1900.

Probably all mussels have been affected by water quality degradation from municipal and industrial wastes, pesticide runoff, and increased siltation. Dredging and disposal of riverbed material by private companies was listed as another adverse factor.

Specimen Findings

Fuller's crew of 16 surveyors collected more than 8,500 living mussels during 1977, providing a cross-sectional sampling of the river's freshwater mussel fauna. From their scarcity, Fuller concluded that an "unfortunate number" of mussel species were in decline and probably facing extinction—among them the buckhorn (*Tritogonia verrucosa*), bullhead (*Plethobasus cyphus*), and elephant ear (*Elliptio crassidens*).

No trace was found of the Endangered fat pocketbook. The study said this species "may linger in the backwaters, but its presence in the Upper Mississippi River in 1977 was in question." Similarly, no specimens were located of the rare narrow papershell (*Leptodea leptodon*)—also called the scale pearly mussel—and salamander mussel (*Simpsoniconcha ambigua*). The status of the narrow papershell is under review for possible listing under the Endangered Species Act.

Another rare species, the spectacle case mussel (*Cumberlandia monodonta*), was discovered at two sites. This species apparently can live in wing dams that have been built at right angles to the shore to control the flow of the river.

Exotic Intruder

The study discovered the presence of an exotic species—the Asiatic clam (*Corbicula manilensis*)—in the St. Croix River. The species is known to dislodge mussels from the streambed, uprooting them to their eventual death. Fuller said if the Asiatic clam becomes established in the beds where the Higgins' eyes are located and elsewhere, it could pose as big a threat to the mussel population as any of the other adverse factors.

Parasitic Phase

An associated problem is the availability of the proper fish species to serve as glochidial hosts. Many species of freshwater mussels reproduce by the male shedding his sperm into the current; the sperm is then picked up downstream by the female whose eggs become fertilized as they are extruded from the oviducts. The fertilized eggs are held in the gills, where they develop into larval forms known as glochidia.

In some genera, the glochidia develop into juveniles while still in the mussel's gills. But in others, such as *Lampsilis*, the glochidia attach themselves to the gills and body of a passing fish. The larval bivalve then soon becomes covered by fish tissue, which forms a cyst or capsule. After its metamorphosis in this parasitic stage, a juvenile mussel then drops from the fish to the stream bottom, where it grows to adulthood.

Fuller believes further research is needed into the glochidiosis process as no larval hosts have been identified for three of the rare mussels.

Biological Opinion Due

Additional information gathered during this year's survey effort will be available in the form of a second report around the first of the year. These and related data will then be employed by the Service in preparing its biological opinion on the overall impacts of the Corps' channel maintenance operations, which the Service expects to issue by early spring.



Photo by Dona Finnley

Samuel L. H. Fuller, the malacologist selected by the Corps to lead its survey effort, examines a pigtoe mussel

* Leif L. Marking and Terry D. Bills, "Acute Effects of Silt and Sand Sedimentation on Freshwater Mussels," FWS Fish Control Laboratory at La Crosse, Wis., 1977.

Whooping Crane

To help provide additional Federal protection for the Endangered whooping crane (*Grus americana*) during its spring and fall migrations, the Service has proposed designating eight stopover areas along the flyway as Critical Habitat for the species (F.R. 8/17/78).

If finally approved, these areas would be added to the five that were designated as Critical Habitat for the primary flock on May 15, 1978 (see June 1978 BULLETIN), with all thirteen areas in the central flyway providing protected overnight roosting sites and feeding stations for the whooper population of about 70 birds on its long flight between Wood Buffalo National Park, in Canada's Northwest Territories, and Aransas National Wildlife Refuge, on the gulf coast in Texas.

Proposed Areas

The eight areas proposed as additional Critical Habitat are as follows:

1. Kirwin National Wildlife Refuge, in Phillips County, north-central Kansas. Centered on the Kirwin Reservoir on the north fork of the Solomon River, the refuge provides the crane with extensive flats and freshwater marshes.

2. Medicine Lake National Wildlife Refuge, in Roosevelt and Sheridan Counties, northeastern Montana. The refuge includes a manmade impoundment, plus sinks and potholes, that together provide an extensive and relatively isolated wetland environment for the migrating cranes.

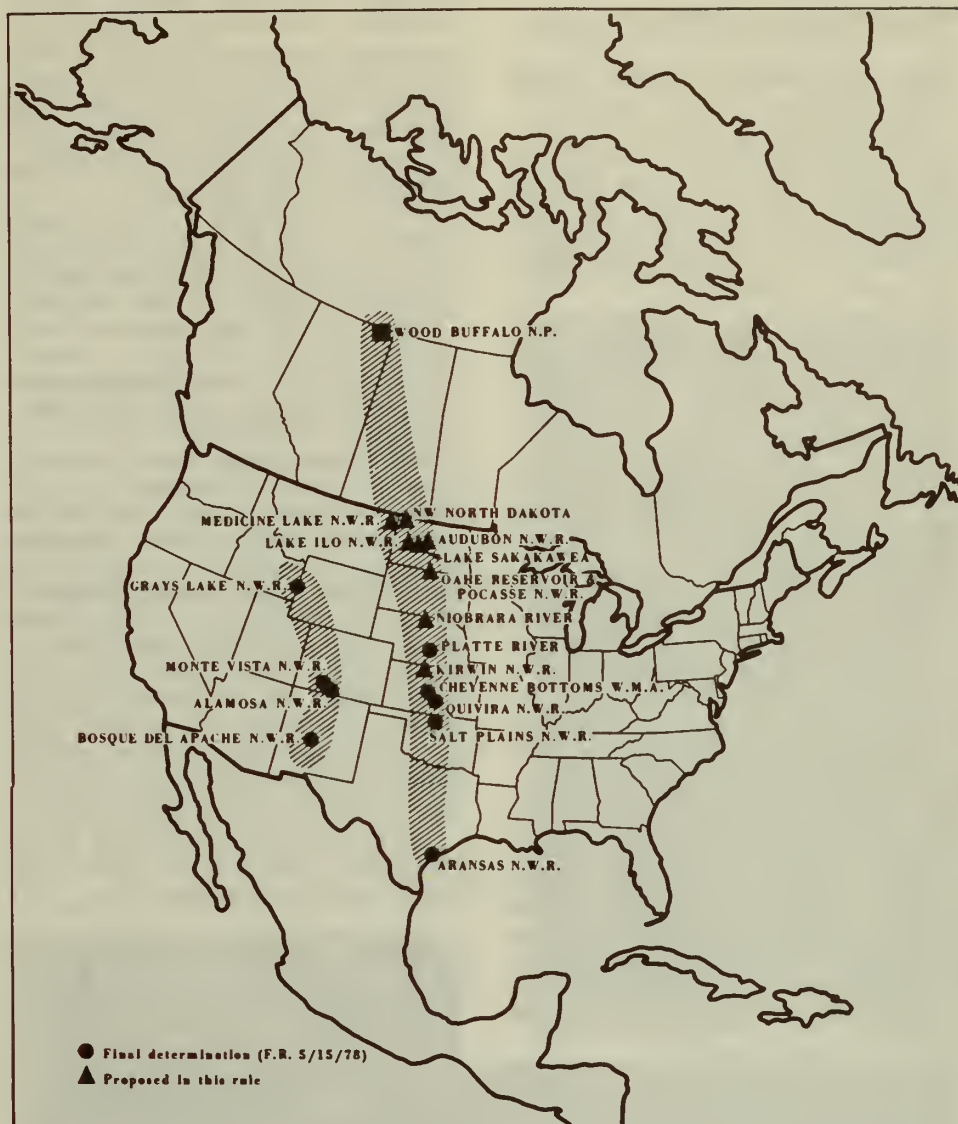
3. An area along the Niobrara River, in Brown, Keya Paha, and Rock Counties, north-central Nebraska, to include extensive sand bars, shallow waters, and adjacent marshes.

4. An area in Burke, Divide, Mount-rail, Renville, Ward, and Williams Counties, northwestern North Dakota. This relatively isolated wetland and prairie environment includes potholes, sinks, ponds, and streams.

5. Lake Sakakawea in Dunn, McKenzie, McLean, Mountrail, Ward, and Williams Counties, northwestern North Dakota. This lake area includes Lake Sakakawea (the reservoir behind Garrison Dam on the Missouri River), the dam itself, and Audubon National Wildlife Refuge; it provides a relatively isolated environment with extensive shallows and gravel islands.

6. Lake Ilo National Wildlife Refuge, in Dunn County, western North Dakota. Prairie potholes, sinks, and streams characterize this small stopover area to the south of Lake Sakakawea.

7. Oahe Reservoir area, in Burleigh, Emmons, Morton, and Sioux Counties, south-central North Dakota. This extensive area includes the waters of the



Eight additional stopover areas are proposed as Critical Habitat for the whooping crane to protect the primary flock's feeding and roosting sites along the central flyway

North Dakota portion of the reservoir, which is an impoundment behind Oahe Dam on the Missouri River. With its potential for extensive stretches of shallow water and numerous gravel islands, the area provides the migrating cranes with many roosting and feeding sites, particularly during periods of drought.

8. Oahe Reservoir area, in Campbell, Corson, Dewey, Haakon, Hughes, Potter, Stanley, Sully, Walworth, and Ziebach Counties, north-central South Dakota. This area, which includes Oahe Dam and the Pocasse National Wildlife Refuge, constitutes the South Dakota portion of the Oahe Reservoir area.

Critical Habitat in North Dakota

In issuing its recommendations for Critical Habitat, the Service emphasizes the importance of including the three proposed areas in northwestern

and western North Dakota, in that these areas constitute the last stopover for the cranes on their spring migration northwards to nest in Wood Buffalo National Park. As the Service points out, "If the cranes were to be deprived of their feeding grounds in North Dakota [and adjacent southern Canada] and were to arrive at the park during one of the common spring snow storms, they might die of malnutrition or reabsorb their egg material for nourishment, thereby reducing the likelihood of reproductive success."

Inclusion of Dams

Manmade structures are customarily excluded from Critical Habitats. This proposal is unusual, therefore, in that it specifically includes two such structures—Garrison Dam and Oahe Dam. Their inclusion is based on the knowledge that their existence has led to the formation of reservoirs that, in some

(continued on next page)

Whooping Crane (continued from page 7)

years, help provide habitats suitable for the whooping crane's stopovers.

(These reservoirs become particularly important in drought years, when most natural wetlands in the area become dry. Then the lowered reservoirs provide a reserve of bars and shallow islands that can be used by the cranes and other waterbirds.)

The Service notes that, if finally approved, the proposed rulemaking will not interfere with the routine operations of the two dams.

Comments Due

In issuing the rulemaking, the Service set a November 15 deadline for the Governors of Kansas, Montana, Nebraska, North Dakota, and South Dakota to submit comments on the proposal and an October 15 deadline for the public. Subsequently, the Service extended the due date for public comments to November 15.

More Protection
Sought by Service
For Desert Tortoise

Rapidly mounting evidence that the desert tortoise (*Gopherus agassizii*) is declining throughout much of its range in the Southwestern United States has prompted the Service to take two actions to further conservation of the species:

- The Beaver Dam Slope tortoise population in southwestern Utah, which has fallen from 2,000 to fewer than 350 individuals, has been proposed for Endangered status (F.R. 8/23/78). The proposed rulemaking also defines a 38-square-mile area as Critical Habitat for this population.

- A status review has been initiated for the desert tortoise throughout its known range in California, Nevada, Utah, Arizona, and adjacent areas of Mexico, including the state of Sonora, to determine whether the species should be proposed for listing as an Endangered or Threatened species (F.R. 8/23/78.)

Comments from the public on the proposal to list the Beaver Dam Slope population should be submitted to the Service no later than October 23, 1978. The Governor of Utah has until November 22, 1978, to make his views known to the Service.

Comments are being solicited from the governors of the four States involved in the tortoise status review and other interested parties. They are due by November 22, 1978.

Habitat Destruction

The tortoise generally appears to be

in trouble because of livestock overgrazing, which has reduced forage available to the tortoise, and because of habitat destruction resulting from agricultural and off-road vehicle (ORV) use. In addition, some populations are reportedly being harmed by overcollection and by maiming and killing, especially along highways.

In the case of the Beaver Dam Slope population, the Service said the primary adverse factor was overgrazing by cattle, which had reduced perennial grasses and destroyed vegetation, especially the creosote bush, around which tortoises construct their burrows. Cattle also may cave in burrows, harming young tortoises.

The proposed rulemaking is based upon a petition submitted by the Desert Tortoise Council in August 1977, plus a review of the scientific literature and reports from the Bureau of Land Management. The Service has noted that, if the estimated 5.5 percent annual rate of decline were to continue for 40 years, only 40 tortoises would be left of the fewer than 350 presently remaining. Most of the population consists of adults, many of them quite old, including some that were marked in a study conducted from 1936 to 1946.

The proposed Critical Habitat lies in Washington County, which borders the Nevada and Arizona state lines.



Photo by C. Kenneth Dodd, Jr.

Desert tortoise on Beaver Dam Slope

Utah Objection

Donald A. Smith, former director of the Utah Division of Wildlife Resources, has indicated the State would object to listing the Beaver Dam Slope population at the present time. He has expressed concern that listing would be used to eliminate or drastically reduce grazing and provide legal arguments against grazing adjustments.

State Protection

In launching the status review of the entire species, the Service noted that all the States in which it is found presently protect the reptile. The Service said it recognized these efforts but nonetheless feels that a comprehensive review of the species' status throughout its range is warranted.

Three Texas Fishes

To help provide Federal protection for three species of fish found only in southwestern Texas, the Service has proposed Endangered status for the Leon Springs pupfish (*Cyprinodon bonvinus*) and Goodenough gambusia (*Gambusia amistadensis*) and Threatened status for the Devil's River minnow (*Dionda diaboli*), as well as Critical Habitat for the pupfish and minnow (F.R. 8/15/78).

All three species have declined in recent years as a result of adverse habitat modification. In fact, the gambusia's original habitat has been totally destroyed by a reservoir development and the fish survives only in captivity.

Leon Springs Pupfish

Formerly, the pupfish was known to occur in Leon Springs, Diamond Y Spring, and the latter spring's outflow stream, Leon Creek. All three bodies of water are located in Pecos County, north and west of Fort Stockton.

Excessive removal of ground water in the area greatly reduced stream flows. Leon Springs dried up in 1962, thereby extirpating the pupfish population, and subsequently, the upper portion of Leon Creek dried up. At present, reduced stream flows also threaten the remaining pupfish populations in the lower portion of the creek and in Diamond Y Spring.

In 1974, an additional threat to the species was discovered: hybridization with an introduced pupfish, *C. variegatus*, in the lower part of the creek. In March 1978, hybrids were also found in Diamond Y Spring. Efforts are now being made to eliminate both the hybrid and introduced pupfishes. In addition, pure Leon Springs pupfishes are being held at Dexter National Fish Hatchery.

Diamond Y Spring and Leon Creek, which provide sufficient space, food, and cover to sustain a viable Leon Springs pupfish population, have been proposed as Critical Habitat for the species.

Goodenough Gambusia

The original habitat of the Goodenough gambusia consisted solely of Goodenough Spring, located near the Rio Grande in Val Verde County. Completion of the Amistad Dam on the Rio Grande in the late 1960's eventually resulted in the flooding of the Goodenough Spring area. When the reservoir reached full pool level, the spring was under more than 70 feet of silt-laden water and no evidence could be found of the gambusia population.

At present, the only known populations of the Goodenough gambusia are those being maintained at the University of Texas and Dexter National Fish Hatchery.

(continued on next page)

Rulemakings (continued)

Fishes (continued from page 8)

The Service hopes that eventually it will be possible to reestablish the species in the wild.

Devil's River Minnow

The former range of the Devil's River minnow consisted of several streams and springs located near the Rio Grande in Val Verde County. In recent years, however, that range has been greatly reduced by habitat alteration.

The filling of Amistad Reservoir flooded the lower portion of the Devil's River, destroying the local Devil's River minnow population. Ground water removal led to extirpation of the population in the river's headwaters, and also reduced Pecan Springs—which had originally consisted of at least six springs—to one flowing spring.

At present, reduced stream and spring flows resulting from ground water removal pose a threat to the survival of the remaining populations in the Devil's River and in Pecan Springs and its outflow stream. In addition, urbanization threatens the populations in San Felipe Creek, San Felipe Springs, and several short spring runs, all of which lie in or near the city of Del Rio.

All of these areas have been proposed by the Service as Critical Habitat for the species.

Comments Due

The public's comments on this proposed rulemaking should be submitted no later than October 13, 1978; comments from the Governor of Texas are due by November 12, 1978.

Virgin River Chub

Under a proposed rulemaking issued by the Service, the Virgin River chub (*Gila robusta seminuda*) would be listed as Endangered and portions of the river flowing through Utah, Arizona, and Nevada would be identified as Critical Habitat (F.R. 8/23/78).

The chub is endemic to a 125-mile-long section of the Virgin River extending from below La Verkin Springs, Utah, downstream to the backwaters of Lake Mead, Nevada. However, more than 50 percent of this section of the river flows intermittently (the result of water diversion for agriculture), and water quality in several portions may not be suitable to sustain the fish. These factors, plus flooding from Lake Mead, have reduced populations of the chub—once the top carnivore in the river's ecosystem—as has increased predation by such introduced exotic species as the green sunfish, largemouth bass, and red shiner.

The Service said the chub's habitat is being further threatened by reduced flows of the river from the proposed Warner Valley project. In addition, the

Bureau of Reclamation's proposed desalinization project at La Verkin Springs could adversely affect the chub's habitat.

"Any additional loss of flow or alteration of habitat in the Virgin River may result in the extinction of this species," the Service said.

Critical Habitat for the species would include the river's main channel from La Verkin Springs to the Lake Mead backwaters.

Comments on the proposal should be submitted to the Service no later than November 22, 1978.

New Mexican Ridge-Nosed Rattlesnake

In a final rulemaking issued by the Service, the New Mexican ridge-nosed rattlesnake (*Crotalus willardi obscurus*) has been listed as Threatened and its known range in southwestern New Mexico has been designated as Critical Habitat (F.R. 8/4/78).

The ruling, effective August 21, emphasizes that Federal protection is needed to help reduce illegal collection of this rare subspecies. Critical Habitat for the snake is identified as "an area between 6,200 feet and 8,532 feet in Bear, Indian, and Spring Canyons, Animas Mountains."

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Calif. Plants (continued from page 1)

The Service said that any further loss of habitat would appreciably decrease the likelihood of the survival and recovery of these two endemic plants.

A total of six comments were received on the proposal following publication in the *Federal Register* on February 8, 1977. All of those respondents who commented on the biological aspects of the proposal favored Critical Habitat determination.



Photos by Norden H. Cheatham

The Contra Costa wallflower (right) and Antioch Dunes evening primrose (below) survive only on California's Antioch Dunes, now protected as Critical Habitat



(The subspecies' only other known location is an area in the Sierra de San Luis, in the adjoining Mexican state of Chihuahua.)

The final rulemaking differs from the proposed rulemaking in that it provides for Threatened rather than Endangered status and includes a more precise definition of Critical Habitat.

These changes were made principally on the basis of comments and other information received by the Service from the New Mexico Department of Game and Fish and 11 other respondents following publication of the proposal in the *Federal Register* on May 26, 1977 (see June 1977 BULLETIN).

Comments on Proposal

The State game and fish department, which recommended Threatened status, noted that the snake is already listed as endangered by the State and that it may be somewhat more widespread than indicated in the original proposal; the department suggested addition of a third canyon to the Service's proposed delineation of Critical Habitat and indicated that a fourth one may also have a subspecies population. In addition, the department took note of the conservation efforts of a local cattle company that owns much of the area proposed as Critical Habitat.

The company itself opposed the Service's proposal, claiming that existing State laws and the company's private efforts (including controlling access to the canyons and limiting development within the area) already provide the rattlesnake with adequate protection.

Herbert S. Harris (Natural History Society of Maryland), who had previously written a major study of the snake, recommended refining the proposal's generalized identification of Critical Habitat, which had been given simply as all elevations in the Animas Mountains above 6,200 feet.

In issuing its final ruling, the Service concluded that the subspecies should not be listed as Endangered, because "the plight of this unique rattlesnake has been recognized by the State and the landowners have made a vigorous attempt to discourage collectors and associated habitat destruction." Nevertheless, it warrants Threatened status in that "the high price commanded by the . . . [snake] still makes it a very desirable animal, and attempts to secure specimens can probably be expected in spite of strict control."

In addition, the Service adopted the Critical Habitat modification suggested by both Herbert Harris and the State game and fish department.

Ten North American Beetles



Andrew's dune scarab beetle

Photo by A. Hardy

The Service has proposed the listing of two North American beetles as Endangered and eight as Threatened, and the determination of Critical Habitat for all ten species and subspecies (F.R. 8/10/78).

Native to three Western States and adjoining portions of Canada and Mexico, the beetles have been proposed for protection under the Endangered Species Act of 1973 because their population levels have been declining and their habitats were and/or are undergoing adverse modification.

Proposed as Endangered

The following two beetles have been proposed for Endangered listing:

Beller's ground beetle (*Agonum belleri*). The known range of this beetle is limited to a few lowland sphagnum (peat) bogs in the State of Washington and in British Columbia. In Washington, the beetle was formerly found in Chase Lake Bog (Snohomish County) and Kings Lake Bog (King County). However, habitat alteration resulting from peat mining and housing development has eliminated the Chase Lake Bog population. Kings Lake Bog—now the only known locality in the United States for this beetle—has been proposed as Critical Habitat.

Mojave rabbitbrush longhorn beetle (*Crossidius mojavensis mojavensis*). Habitat alteration has reduced the range of this beetle, in southern California, from five locations in Los

Angeles and Kern Counties to one site near Lancaster, in Los Angeles County. Recommended for designation as Critical Habitat, this small area contains *Chrysanthamnus nauseosus gnaphalodes* and *C. n. mojavensis*, which serve as essential host plants for the beetle.

Proposed as Threatened

The following eight beetles have been proposed for Threatened listing:

Sacramento anthicid beetle (*Anthicus sacramento*). This species is found only at two sand dune sites along the Sacramento River in central California. One site, on Grand Island (Sacramento County), currently serves as a garbage dump; the other site, near Rio Vista (Solano County), is subject to heavy off-road vehicle traffic. These uses are adversely modifying the beetle's natural habitat. Both sites have been identified as essential to the survival of the species.

Globose dune beetle (*Coelus globosus*). Formerly, this beetle was common in low beach foredunes along the Pacific coast from central to southern California, as well as in Baja California, Mexico. At present, though, the localities of occurrence are relatively few and the species' numbers are limited.

The principal cause of this decline is destruction of the natural foredune vegetation resulting from recreational development, human traffic on the

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dunes, and the introduction of European dune grass (which is incompatible with the beetle's needs).

As proposed by the Service, Critical Habitat for the globose dune beetle consists of eight coastal sites in Mendocino, Sonoma, Marin, San Mateo, Monterey, Ventura, and San Diego Counties.

San Joaquin dune beetle (*Coelus gracilis*). The known range of this species now consists of only four sites, all located along the western edge of the San Joaquin Valley in central California. (The population at a fifth site, in the Antioch Dunes in Contra Costa County, has already been extirpated as a result of habitat alteration.)

Two of the remaining sites, in Fresno and San Benito Counties, are very vulnerable to habitat damage in that each of them is only a few hundred square meters in area. The other two sites, in Fresno and Kings Counties, are already being subjected to habitat alteration as a result of off-road motorcycle usage.

The Service has recommended designating all four sites as Critical Habitat for the San Joaquin dune beetle.

California elderberry longhorn beetle (*Desmocerus californicus dimorphus*). This beetle formerly occurred in elderberry thickets in oak woodlands along the Sacramento and San Joaquin rivers and their tributaries in central California. However, agricultural activities, levee construction, and stream channelization have destroyed much of the

beetle's natural habitat. In addition, the clearing of underbrush (including elderberry bushes) and the planting of lawns in some State and county parks have further reduced the insect's range.

The beetle is now limited to fewer than ten localities, and two of these—Goethe Park, along the American River in Sacramento County, and an area along Putah Creek, in Solano County—have been proposed as Critical Habitat.

Delta green ground beetle (*Elaphrus viridis*). Rediscovered in 1974, almost a century after it was first collected, the delta green ground beetle is limited to the edges of two vernal pools in Solano County in central California. These pool areas, which could be destroyed by agricultural activities or drainage projects, have been proposed as Critical Habitat for the species.

Robinson's rain scarab beetle (*Phoebetus robinsoni*). This species' known range consists of no more than three localities in San Diego and Orange Counties, in southern California. It is believed that recreational and housing development may have already extirpated the beetle population at O'Neill Park, in Orange County. Housing development also threatens the population near Laguna Beach, in Orange County (the area proposed for Critical Habitat designation). Only the Scissor's Crossing (San Diego County) population remains unthreatened at present.

Andrew's dune scarab beetle (*Pseudocotalpa andrewsi*). This beetle is found only in the Glamis Dunes, or Imperial Sand Hills, located in Imperial County in southeastern California. It has a specialized habitat, consisting of troughs of loose, drifting sand set between the dunes. In its immature stages, the beetle feeds on dead organic matter in the troughs. Off-road vehicles traversing the troughs prevent the accumulation of such organic matter and thereby threaten the survival of the beetle. The Service has proposed the Glamis Dunes as Critical Habitat for the species.

Giuliani's dune scarab beetle (*Pseudocotalpa giulianii*). The only known population of this beetle lives on Big Dune, which is located in Nye County in southern Nevada. The beetle's larval stage feeds on dead organic matter that accumulates on the dune slopes. However, this matter tends to be either compacted or dispersed by the passage of off-road vehicles. Big Dune has been proposed as Critical Habitat for the species.

Comments Due

Comments from the public on this proposal should reach the Service by October 8, 1978; comments from the Governors of California, Nevada, and Washington should be submitted by November 7, 1978.

Puerto Rico (continued from page 2)

Research Projects

Puerto Rico is engaged in a cooperative project with the Fish and Wildlife Service and U.S. Forest Service to monitor the population of the Puerto Rican plain pigeon, using a simultaneous station census method. The study indicates that less than 100 of the pigeons remain. (A Service-appointed recovery team recently completed its draft recovery plan for this Endangered species.)

In other research projects, the department has determined that only a small remnant population remains of the white-crowned pigeon (*Columba elucocephala*), which has been listed as endangered by the Commonwealth. The bird's decline is attributed to habitat loss and overhunting. As a management measure, the department has postponed the pigeon and dove hunting season to protect late nesting by the white-crowned pigeon.

A preliminary survey of the manatee (*Trichechus manatus*) indicates that a small breeding population ranges through the coastal waters of southeastern Puerto Rico and Vieques Island (which is under Commonwealth jurisdiction). A proposed distribution and abundance study is awaiting funding by the Service.



Giuliani's dune scarab beetle

Photo by Fred G. Andrews

Pending Rulemakings

The Service expects to issue rulemakings and notices of review on the subjects listed below during the next 90 days. The status or action being considered for each final and proposed rulemaking is given in parentheses.

The decision on each final rulemaking will depend upon completion of the analysis of comments received and/or new data made available, with the understanding that such analysis may result in modification of the content or timing of the original proposal, or the rendering of a negative decision.

Pending Final Rulemakings

- 6 butterflies (C.H.)
- Grizzly bear (C.H.)
- 13 crustaceans (E, T)
- Black toad (T, C.H.)
- 2 zebras (T)
- 12 Western snails (T)
- 2 big-eared bats (E)
- 3 Ash Meadows plants (E)
- 5 plants (E)
- 6 San Francisco Bay Area plants (E, T)
- Leatherback sea turtle (C.H.)
- 2 North Carolina plants (E, T)
- 2 cacti in Colorado and Utah (E)
- Dinosaur milk-vetch in Utah (E)
- 2 Hawaiian cave arthropods (E, T, C.H.)
- Prairie milkweed (E)
- Carter panicgrass (E)
- Large-fruited bladderpod (E)

Pending Proposed Rulemakings

- 2 harvestmen (E, T)
- 3 mussels (C.H.)
- Rocky Mountain peregrine falcon population (C.H.)
- Colorado squawfish (C.H.)
- Unarmored threespined stickleback (C.H.)
- Puerto Rican whip-poor-will (C.H.)
- Laysan duck (C.H.)
- Whip-scorpion (E, C.H.)
- 2 plants (E) and 6 plants (C.H.)
- 20 Appendix I spp.
- Cui-ui (C.H.)
- Bolson tortoise (E)

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	33	227	260	3	18	21
Birds	67	144	211	3		3
Reptiles	11	47	58	10		10
Amphibians	5	9	14	2		2
Fishes	29	10	39	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	15		15	2		2
Total	192	440	632	39	18	57

Number of species currently proposed: 156 animals
1,850 plants (approx.)

Number of Critical Habitats proposed: 72

Number of Critical Habitats listed: 32

Number of Recovery Teams appointed: 64

Number of Recovery Plans approved: 18

Number of Cooperative Agreements signed with States: 22

August 31, 1978

- Coachella Valley fringe-toed lizard (T, C.H.)
- 7 Oregon freshwater fishes (E, T, C.H.)
- Valdina Farms salamander and isopod (E, C.H.)
- Light-footed clapper rail and California least tern (C.H.)
- Yellow-shouldered blackbird (C.H.)
- Virginia fishes (T, C.H.)
- Leopard (reclassification to T)
- 4 Yaqui River fishes (E, C.H.)
- Southeastern fishes (E, T, C.H.)
- Green sea turtle (C.H.)
- Gray bat (C.H.)
- Columbian white-tailed deer and Sonoran pronghorn (C.H.)
- Warner sucker, Oregon (E, C.H.)
- 4 fishes in Kansas, Missouri, and Arkansas (T, C.H.)
- Hawaiian tree snails (E, C.H.)

Abbreviations: E=Endangered
T=Threatened
C.H.=Critical Habitat

Northern States Bald Eagle Recovery Team Appointed

James Grier of North Dakota State University has been named leader of the Northern States Bald Eagle Recovery Team.

Other members of the team appointed in August include Francis J. Gramlich of Augusta (Maine), Jim Mattsson of Bemidji (Minnesota), and James Elder of Twin Cities (Minnesota), all U.S. Fish and Wildlife Service officials; John Mathisen of the U.S. Forest Service (Cass Lake, Minnesota); and Joel Kussman of the National Park Service (Denver, Colorado).



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

EDITORIAL

We apologize for the delay in getting the October BULLETIN to you. As most of you now know, Congress and the President have acted to amend the legislation which we have been charged to administer. In the process, we lost 41 days from normal program operations because we lacked legal authorization to function beyond the close of the 1978 fiscal year which ended September 30th.

During this time, staffers employed to implement all but section 6 of the 1973 Act—for which authorization was extended in an earlier amendment—were precluded from working on permit processing (under both the Act and the Convention), species data review and listing, recovery planning, responses to public and congressional inquiries, and to some degree enforcement of the Act's prohibitions.

As you learn the details of the 1978 amendments, I trust you will understand the significant impact these modifications will have on many aspects of the program. While our departmental solicitors have yet to give us their legal interpretations of what we must do to implement the new requirements, we do know that the pace at which we can proceed to comply with the Act's protective provisions will now be substantially slowed. I hope that you will bear with us as we grapple with the new stipulations, and develop the necessary regulations and procedural guidelines essential to making us fully operative.

It is my belief that, for the most part, these amendments serve not to weaken the integrity of the 1973 Act, but to reaffirm the commitment of Congress in passing this landmark legislation. The Amendments will strengthen the consultation process under the mandates of Section 7, and will insure increased public involvement as we

move to protect imperiled plants and animals and the habitats critical to their survival.

After 6 weeks with our doors officially closed, the Endangered Species Program is once again back in busi-

ness—and it's good to be back!

Keith M. Schreiner
Associate Director and
Endangered Species
Program Manager

President Signs Endangered Species Amendments

On Friday, November 10th, President Carter signed "The Endangered Species Act Amendments of 1978," reauthorizing administration of the Endangered Species Act of 1973 and, among other things, establishing a cabinet-level committee authorized to exempt Federal agencies from compliance with some of the Act's protective provisions.

(Section 7 of the Act requires all Federal agencies to insure that their actions do not jeopardize the continued existence of Endangered or Threatened species, or result in the adverse modification of their Critical Habitats.)

Although congratulating Congress for working hard to resolve this difficult issue, the President expressed some misgivings in approving the compromise approach to handling irresolvable conflicts under the section 7 mandate. "While I believe that this new exemption process is not necessary, I hope that as the committee carries out its responsibilities, it will make the utmost efforts to protect the existence of the species inhabiting this planet."

The President emphasized his belief that the Act has worked without such an exemption process "because all agencies have made efforts to resolve conflicts and, where necessary, to pursue alternate courses of action. This consultation and cooperation should continue under these new amend-

ments, minimizing the number of requests for exemptions." Upon signing the bill, Carter directed committee members to be "exceedingly cautious in considering exemptions," and asked that national security exemptions be exercised "only in grave circumstances posing a clear and immediate threat to national security." In the words of the President, "Destruction of the life of an endangered or threatened species should never be undertaken lightly, no matter how insignificant the species may appear today."

Congress Sought More Flexibility

President Carter's approval followed a flurry of congressional activity during which House and Senate conferees

(continued on page 3)



U.S. and Mexico agencies are working to save Endangered Kemp's ridley.

See Story on page 6

Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of September.

NOTICE! In early October, the Washington staffs of the Office of Endangered Species, the Wildlife Permit Office, and the Division of Federal Aid moved to Arlington, Virginia. For those wishing to visit these offices, all are located in the Broyhill Building (1000 N. Glebe Road, Arlington, Virginia), but their mailing address will remain the same (c/o U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240). New phones for the respective offices are given below.

Office of Endangered Species:

Chief703/235-2771
Branch of Biological Support703/235-1975
Branch of Management Operations703/235-2760
Branch of Program and Administrative Services703/235-2407

Wildlife Permit Office:

Chief703/235-1937
Permit Branch703/235-1903
Management Operations Branch703/235-2418

Division of Federal Aid703/235-1526

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rector*; David B. Marshall, *Endangered
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U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories.
Region 2: Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Michigan, Minne-
sota, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana,
Mississippi, North Carolina, South Carolina, and Tennessee. **Region 5:** Connecticut, Delaware, Maine,
Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Ver-
mont, Virginia, and West Virginia. **Region 6:** Colorado, Iowa, Kansas, Missouri, Montana, Nebraska,
North Dakota, South Dakota, Utah, and Wyoming. **Alaska Area:** Alaska.

The ENDANGERED SPECIES TECHNICAL BULLETIN is published monthly by the
U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

Region 1. The third segment of the Hawaiian forest birds survey, com-
pleted in September, puts the popula-
tion of the Hawaiian crow or alala
(*Corvus tropicus*) at over 100 birds—
considerably above previous estimates.
(Next summer's survey will complete

the Island of Hawaii, and will take in
Molokai and Lanai.)

Eight Newell's manx shearwater
chicks (*Puffinus puffinus newelli*)
hatched by foster parent wedge-tailed
shearwaters at Kilauea Point on Kauai
were 43-58 days old at the close of
September. During the month, the pub-
lic assisted the Service in gathering
and banding over 800 Newell's shear-
waters on Kauai. The birds, attracted
by lights as they fly during the night,
were easily collected near streetlights
and buildings and taken to fire sta-
tions, where they were temporarily
held and banded.

Peregrine falcon (*Falco peregrinus
anatum*) Pacific Coast nesting surveys
are in for the summer. According to
counts by State and Service personnel
at the end of September, there were
23 active nests in California. Produc-
tion was documented at 16 nests from
which 24 young fledged. One additional
nest was found in the State of Wash-
ington, although no nesting peregrines
were sighted in the Oregon survey.

Inventories of potential Endangered
and Threatened plants have been com-
pleted on the Desert and Sheldon Na-
tional Wildlife Refuges in Nevada. Can-
didate species were found on both
refuges.

Region 2. In September, personnel
from the Service, other involved Fed-
eral agencies, and the Mexican Gov-
ernment met in Galveston to review
the year's efforts to boost the declin-
ing Kemp's ridley population (see
story on page 6). Attendees laid plans
for forthcoming years while looking at
problems encountered thus far.

Region 5. Through the Extension
Education Program, the Massachusetts
Division of Fish and Wildlife has de-
veloped a draft brochure on the Plym-
outh red-bellied turtle (*Chrysemys ru-
briventris bangsi*). The publication aims
to inform local landowners and town
officials of the species and implica-
tions of its anticipated listing and
Critical Habitat designation. (The bro-
chure will be distributed through the
Extension Education network once the
turtle is listed.)

Region 6. The Service has signed a
memorandum of agreement with Colo-
rado and South Dakota for Extension
Education projects on endangered
species.

Using \$10,000 in Service funds, Col-
orado State University (at Fort Collins)
will prepare and print a publication on
Endangered, Threatened and rare
fishes of the Upper Colorado River
Basin (intended for water user, agri-
cultural, and energy development in-
terests).

At a cost of \$6,750, the South Da-
kota State University is preparing a
(Continued on page 12)

Amendments

(Continued from page 1)

worked through the last hours of the 95th Congress to hammer out the compromise bill. Motivated primarily by the recent Supreme Court ruling upholding the applicability of the 1973 Act to the nearly completed Tellico dam, a number of members of Congress believed the legislation should be changed to provide for human and economic as well as biological considerations in resolving conflicts under section 7. The Senate on July 19 approved a bill to create a special committee to consider exemptions for Federal actions, while on October 14 the House voted out yet a separate administrative mechanism to rule on conflicts (creating not only a committee, but also a review board to determine the appropriateness of exemption applications).

In submitting its final report on H.R. 14104, subsequent to oversight hearings on the 1973 legislation, the House Committee on Merchant Marine and Fisheries stated that "... the evidence developed at these hearings suggests that the consultation process can resolve many if not most of the conflicts that might develop under the Act. . . . It is clear, nevertheless, that there will continue to be some federally authorized activities which cannot be modified in a manner which will avoid a conflict with a listed species." The report concluded that "the bill attempts to retain the basic integrity of the Endangered Species Act, while introducing some flexibility which will permit exemptions from the Act's stringent requirements."

EDITOR'S NOTE:

Although we would like to present a detailed analysis of the 1978 amendments, Public Law 95-632 has brought many changes which have not yet been subjected to legal interpretation. We have therefore refrained from premature attempts to explain new or revised provisions. Detailed definitions of new terms, procedures for implementing the amendments, and other pertinent interpretations will be provided in the form of solicitors' opinions or proposed regulations, as appropriate, at the earliest possible time.

As discussed in the following sections, the amendments not only provide for an exacting, two-tiered review process to consider exemptions under section 7, they also affect the consultation process, listing, Critical Habitat determinations, cooperative agreements with the States, enforcement

and penalties, recovery planning, captive-held raptors, and public hearing/notice procedures.

Consultation Process Modified

Report language from both the House and Senate indicates that their intent in the wording of the new section 7(a) was not to diminish the agencies' mandate to consult with the Secretary, but rather to strengthen the consultation process. According to the new provisions, consultation is to be concluded within 90 days (formerly 60 days by Service regulations) after initiated, or at a time agreed to by the Secretary and the involved agency.

A new section 7(b) requires the Secretary's biological opinion (rendered at the conclusion of consultation) to detail how the agency's action would affect the listed species or its Critical Habitat, and to suggest "reasonable and prudent alternatives" that would avoid jeopardy to the species or adverse modification of its Critical Habitat.

Under a new section 7(c), each Federal agency is now required—with respect to actions for which no contract for construction has been entered into and no construction has begun on the date of enactment of the amendments—to request information from the Secretary regarding the presence of any listed or proposed species within the area of the proposed action. If such species are present, then the agency must prepare a biological assessment within 180 days (or a time mutually agreed to by the agency and the Secretary) identifying species likely to be affected by its action.

Once consultation has been initiated, the amendments stipulate that no irreversible or irretrievable commitment of resources may be made by the agency which forecloses the implementation of alternative measures to avoid jeopardy or adverse impacts on the species or its Critical Habitat.

The Exemption Process

Following consultation, the amendments provide for an elaborate review process through which Federal agencies (and permit or license applicants) may be exempted from the requirements of section 7. Should the Service's biological opinion result in a finding of jeopardy to the species or modification of its Critical Habitat, the involved agency, the Governor of the State in which the action was to occur, or the permit or license applicant may—within 90 days of issuance of the biological opinion—submit an application to the Secretary of the Interior

requesting exemption from the Act's protective requirements.

As outlined in the accompanying flowchart, the first step in the exemption process is the formulation of a Review Board. A board is to be established upon the receipt of the exemption application, to consist of one member appointed by the Secretary of the Interior within 15 days, one member from the affected State to be appointed by the President within 30 days, after consideration of any recommendations by the Governor(s) of the affected State(s), and an Administrative Law Judge selected by the Civil Service Commission.

The Review Board must then consider the application within 60 days after its appointment, making a full review of the consultation carried out and determining, by majority vote, (1) whether an irresolvable conflict exists and (2) whether the exemption applicant has:

- carried out its consultation responsibilities in good faith and has made "a reasonable and responsible effort to develop and fairly consider modifications or reasonable and prudent alternatives to the proposed agency action" which would avoid jeopardy to the species or adverse modification to its Critical Habitat;
- conducted a biological assessment, if required; and
- refrained from making an irreversible or irretrievable commitment of resources.

The Secretary of the Interior is also called upon to submit to the board his views and recommendations concerning the exemption request within 60 days after his receipt of the application.

Any finding by the board that the applicant has failed to meet any of the exemption criteria given above will be considered final action under the Administrative Procedures Act.

If, however, the Review Board makes a positive finding concerning the applicant's eligibility, then the board will proceed to prepare a report for the cabinet-level Endangered Species Committee, to be presented within 180 days following the board's findings. As provided under section 7(g)(7), the report must address the following issues:

- "(A) the availability of reasonable and prudent alternatives to the agency action, and the nature and extent of the benefits of the agency action and of alternative courses of action consistent with conserving the species or the critical habitat;
- "(B) a summary of the evidence concerning whether or not the agency action is in the public interest and is of national or regional significance;

(Continued on page 4)

Amendments

(continued from page 3)

"(C) appropriate reasonable mitigation and enhancement measures which should be considered by the Committee."

The Endangered Species Committee, which is to make a final decision on whether or not to exempt a Federal agency action from the requirements of section 7(a) is to consist of the following seven members:

The Secretary of the Interior
(as Chairman)

The Secretary of Agriculture

The Secretary of the Army

The Chairman of the Council of Economic Advisors

The Administrator of the Environmental Protection Agency

The Administrator of the National Oceanic and Atmospheric Administration

A State representative, as appointed by the President after consideration of recommendations from the Governor(s) of the affected State(s).

Five members of the Committee must be present to constitute a quorum, and the Committee shall meet at the call of the Chairman or five of its members. An exemption may be granted by the Committee, by majority vote of at least

five of its members (voting in person), if it determines within 90 days after receipt of the Review Board's report that:

"(i) there are no reasonable and prudent alternatives to the agency action;

"(ii) the benefits of such action clearly outweigh the benefits of alternative courses of action consistent with conserving the species or its critical habitat, and such action is in the public interest; and

"(iii) the action is of regional or national significance. . . ."

At the time of an exemption determination, the Committee must also establish "reasonable mitigation and enhancement measures, including, but not limited to, live propagation, transplantation, and habitat acquisition and improvement, as are necessary and appropriate to minimize the adverse effects of the agency action upon the endangered species, threatened species, or critical habitat concerned."

Once granted, an exemption shall be considered permanent with respect to all Endangered and Threatened species for the purposes of completing an agency action, if any required biological assessment has been conducted. If, however, the Secretary of the Interior finds that the project or

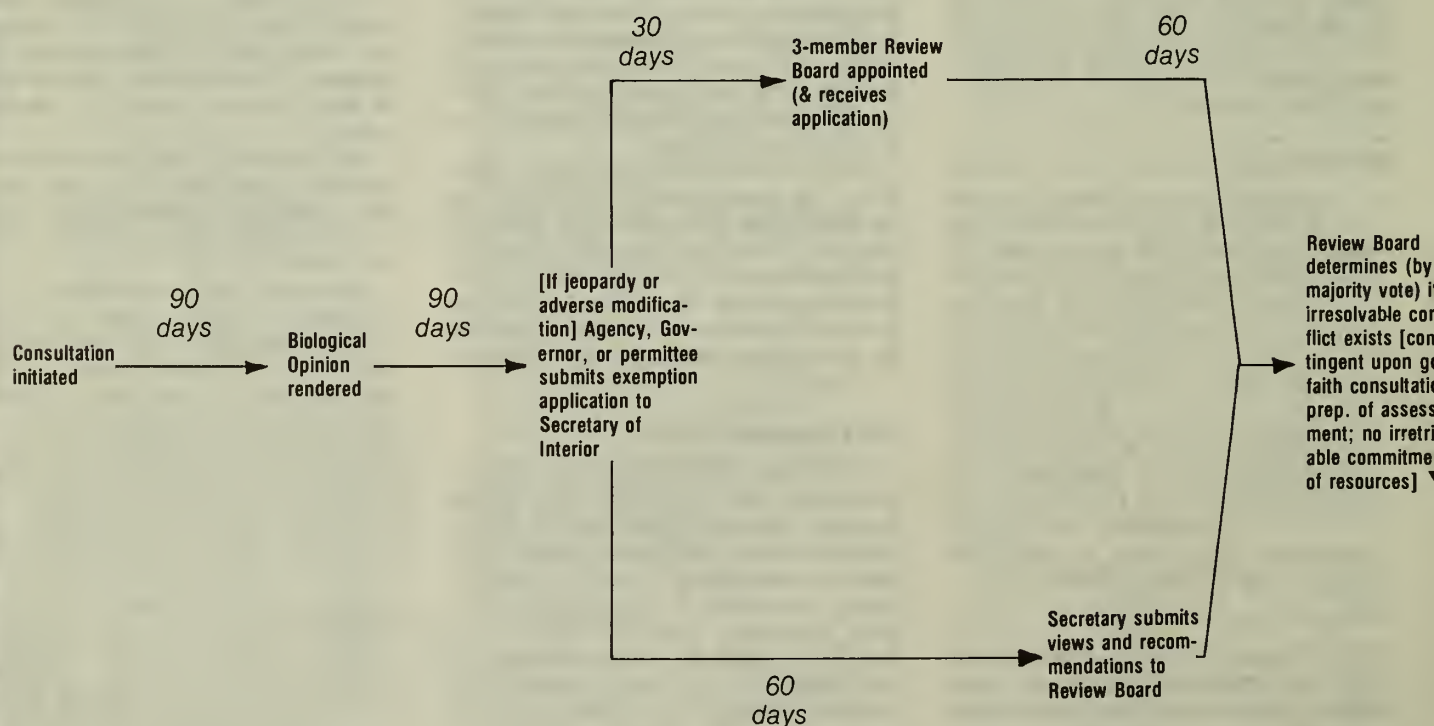
action would result in the extinction of the species, the exemption shall not be permanent, and the Committee must reconsider the exemption (within 30 days following the Secretary's finding) and determine whether to uphold the exemption order.

Three exceptions to the exemption review process are provided for:

- the Secretary of State may prohibit exemption consideration for actions that would violate any international treaty obligations of the United States (by submitting such findings to the Committee in writing within 60 days after the receipt of an exemption application).
- the Secretary of Defense can exempt actions from the provisions of section 7 if he finds that the actions are necessary for national defense.
- the President may grant exemptions for declared major disaster areas.

The Committee's final decision is subject to judicial review, and any person wishing to appeal may bring such action to the U.S. Court of Appeals.

Once an exemption order is granted, the applicant shall pay for and carry out any mitigation and enhancement measures specified by the Committee. The applicant must also submit an annual report to the Council on Environ-



Exemption process provided for in Endangered Species Amendments of 1978

mental Quality, describing its compliance with the prescribed mitigation and enhancement measures. (These reports will then be published by CEQ in the *Federal Register*.)

To insure implementation of the new exemption process, the amendments also call for the promulgation of regulations by the Secretary "... which set forth the form and manner in which applications for exemption shall be submitted to the Secretary and the information to be contained in such applications."

Tellico and Grayrocks to be Reviewed

Two projects, Tennessee Valley Authority's Tellico dam and the Grayrocks Dam and Reservoir Project, have been pinpointed for early review. Within 30 days of enactment of the amendments, the Endangered Species Committee is to proceed to consider the exemption of the two projects (the latter proposed, and the former nearly completed but enjoined by the Supreme Court ruling) from the provisions of section 7.

The Committee is directed to exempt the projects—within 90 days after enactment of the amendments—if it determines that (1) there are no reasonable and prudent alternatives to the projects and (2) the benefits of

the projects outweigh the benefits of alternative courses of action consistent with conserving the affected species or their Critical Habitat, and the projects are in the public interest. If no decision is made by the Committee within the 90-day period, the projects shall be automatically exempted.

New Definitions, Listing Requirements

Several new definitions are provided in the amendments. A "species" which may be considered for protection under the Act is now limited to "... any subspecies of fish or wildlife or plant, and any distinct population segment of any species of *vertebrate* fish or wildlife which interbreeds when mature." (emphasis added)

Critical Habitat has been defined for the first time, revising the Service's definition (by regulation) to include

"the specific areas within the geographical area occupied by the species at the time it is listed ... on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management consideration or protection; and ... specific areas outside the geographical area ... upon a determination by the Secretary that

such areas are essential for the conservation of the species."

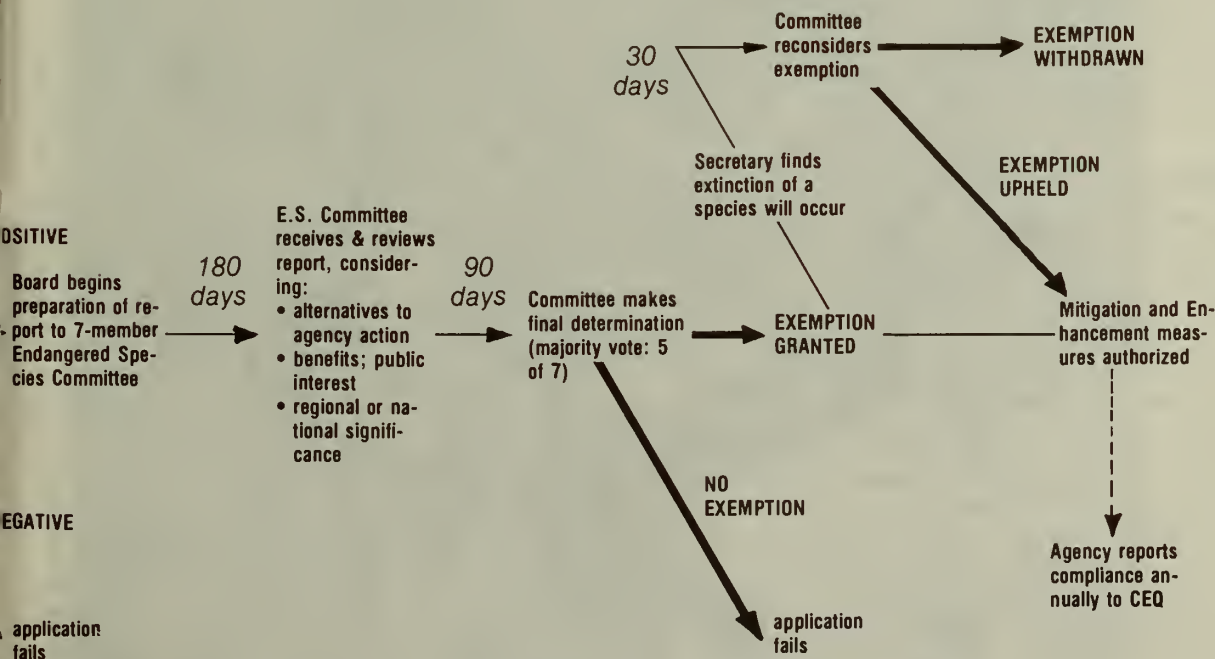
Economic Impact to be Considered

An amendment to section 4(b) now requires the Secretary to consider the economic impact of specifying any particular area as Critical Habitat. The language reads:

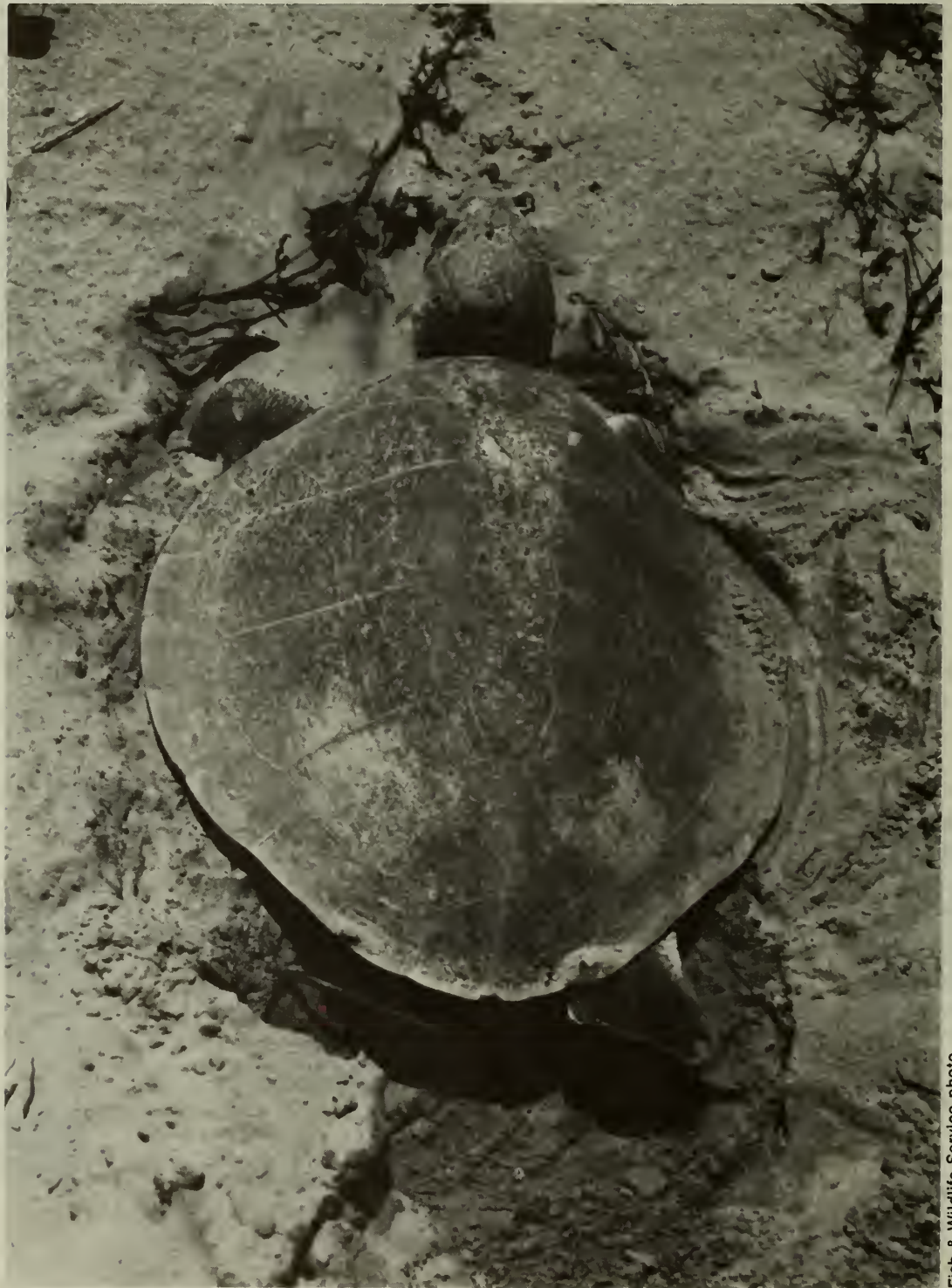
"(4) In determining the critical habitat of any endangered or threatened species, the Secretary shall consider the economic impact, and any other relevant impacts of specifying any particular area as critical habitat, and he may exclude any such area from the critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying the area as part of the critical habitat, unless he determines, based on the best scientific and commercial data available, that the failure to designate such area as critical habitat will result in the extinction of the species."

A number of other provisions have been incorporated in section 4. To "the maximum extent prudent," Critical Habitat must now be determined at the time a species is listed. A more involved public notification process is now required prior to the listing of

(continued on page 11)



U.S.-Mexico Restoration Efforts May Be Only Hope For Kemp's Ridley



Fish & Wildlife Service photo

Unlike other sea turtles, the Kemp's ridley nests in the daylight making her and her clutch even more vulnerable to poaching and predation.



To promote imprinting, project workers at Rancho Nuevo placed ridley eggs directly into bags containing sand from Padre Island. More than 2,000 eggs were positioned in 17 styrofoam containers, again between layers of Padre Island sand, and shipped to the U.S. for incubation and headstarting.



This NMFS headstarting facility in Galveston is now home to both "Padre Island" and Rancho Nuevo hatchlings. The turtles are kept in 6' x 20' raceways and 6' diameter tanks filled with treated water from the Gulf, where they subsist on a special pelleted food formula.

Having completed the first leg of their "action plan," the Mexican Government and four U.S. agencies are hoping they may be one step closer to saving the Kemp's ridley from extinction.

The Endangered Kemp's (or Atlantic) ridley sea turtle (*Lepidochelys kempi*) is the smallest of the world's marine turtles, weighing barely 100 pounds. The species' primary nesting site was discovered only in 1961, when

a 1947 film was viewed of one "arribada" of about 40,000 nesting females on Playa de Rancho Nuevo, a 14-mile beach in the Mexican State of Tamaulipas on the Gulf Coast. But this year, no more than 500 females arrived to nest at Rancho Nuevo.

Since 1966, Mexican marines have been posted on Rancho Nuevo to guard the turtles and their nests from natural predators and human poachers (the eggs are considered by many a deli-

cacy and aphrodisiac). But despite these seasonal patrols and other protective efforts, the ridley population has continued to plunge downward due also to incidental take during U.S. and Mexican shrimping operations. U.S. biologists now estimate the species' numbers at about 1,500-3,000, predicting its possible extinction within 10 years.

It is the critical status of the ridley that led Interior's Fish and Wildlife Service and National Park Service, the National Marine Fisheries Service of the Department of Commerce, and the Texas Parks and Wildlife Department to join with Mexico's Instituto Nacional de Pesca in a multi-faceted program to promote the survival of the turtle. Biologists from the five agencies have already succeeded in transplanting more than 2,000 ridley eggs from Mexico to the U.S. and are well into a "headstart" program as part of their cooperative effort to replenish the turtle's dangerously low population levels. The agencies' plan calls for (1) increasing the ridley population on its only known major nesting beach in Tamaulipas through both increased protection at Rancho Nuevo and captive rearing in the U.S., while (2) establishing a second nesting colony on the Padre Island National Seashore in Texas through imprinting and headstarting.

Managed by the National Park Service, Padre Island was selected for the attempt to create another nesting colony—a feat never before achieved with sea turtles—as the ridley has sporadically nested in the past along this narrow strip of land (which is similar to Rancho Nuevo in slope, profile, and sand grain size, and is fully protected).

Imprinting Critical

Getting the ridleys to return to Padre Island to nest in significant numbers is the key to success of the first phase of the program. Starting a new colony may prove difficult, however, because of man's limited knowledge of the imprinting process through which turtles learn to distinguish their birthplace from all other beaches in the world, so that they may return some years later to nest.

Although scientists can only speculate as to what processes drive marine turtles to seek out their natal beach for nesting, turtle behavior had led many to conclude that the chemistry of both the sand and water may influence imprinting. The eggs undergo a rather lengthy incubation period (approximately 50 days), while exposed to one set of environmental conditions, and the hatchlings then exhibit a highly directed frenzy as they move

(continued on page 8)

Kemp's Ridley

(continued from page 7)

from their nests to the ocean, not relaxing until they reach the Gulf Stream. Ridleys have also been seen thrusting their snouts deep into the sand as if smelling it.

Eggs Bound for U.S.

This past May, when the ridleys pulled themselves from the Gulf onto Rancho Nuevo sands—as they have done for perhaps hundreds of thousands of years—Mexican and U.S. biologists watched while the turtles hollowed out their next cavities. But as the mother ridleys began dropping their eggs (much like slippery ping-pong balls, averaging 105 per clutch), project workers snatched more than 2,000 of them even before they could touch the Mexican sand, placing the eggs directly into bags with sand imported from Padre Island. In the first week of July, after the eggs were collected and positioned in styrofoam containers for incubation, the precious cargo was flown by the Park Service (and by a U.S. Coast Guard helicopter) to Padre Island, not far from the U.S.-Mexico border.

During incubation at Padre Island (varying from 49 to 53 days), the physical condition and temperature of the eggs were monitored daily. Infertile eggs were removed, and deionized water was used to prevent dehydration. When all had hatched, the newborn ridleys were released on the beach in early morning and allowed to rush toward the sea and then to swim for a few meters. About 1,860 hatchlings were imprinted in this manner (an 84 percent hatching rate) before they were taken from the Gulf and prepared for their second journey.

Packed carefully into cardboard boxes, the hatchlings were then airlifted by the Texas Parks and Wildlife Department to the NMFS marine laboratory at Galveston for headstarting. Here, in tanks full of specially treated water from the Gulf, the transplanted hatchlings will be nurtured in a controlled environment for 6 to 12 months, or until they are large enough to withstand most marine predators.

Efforts to Boost Mexican Population

While counting nesting turtles, biologists back at Rancho Nuevo were also busy measuring and tagging the nesting females (which are generally oblivious to such activity during egg laying). More than 200 of the females were tagged in Mexico this summer.

With the assistance of the Fish and Wildlife Service, Mexican and U.S.

workers managed to gather some 85,000 eggs from nests at Rancho Nuevo (more than double that collected last year), placing 65,000 of them in a "corral" on the beach to safeguard them from predators such as ghost crabs, coyotes, and man. Another 20,000 eggs were placed in styrofoam containers in a covered "egg house" in an attempt to boost hatching success while permitting biologists to study the different incubation methods.

Several weeks later (incubation times averaged 48 days in the corral and 55 days in the house), nearly 36,500 hatchlings emerged from their artificial nests in the corral (a 56 percent survival rate), while 11,500 (or 58 percent) hatched in the styrofoam boxes and survived. Under the second phase of the agencies' plan, 1,200 of these baby turtles were then flown by U.S. Coast Guard plane from Rancho Nuevo to the Galveston lab, also for headstarting. The biologists hope that captive rearing in this manner may reduce the extraordinarily high mortality rate for hatchlings, thereby also insuring the perpetuation of a Rancho Nuevo nesting population in years to come. (It is now believed that for every 100 hatchlings only 1 survives to adulthood.)

Many scientists are cautiously optimistic about the feasibility of headstarting these turtles, as disease and injury has plagued similar past efforts. But Dr. James McVey, head of the Galveston operation, is now reporting more than a 90 percent success rate. The ill and injured ridleys are thus far being isolated, treated, and "recycled" back with healthy turtles with apparent success.

The hatchlings will eventually be fitted with numbered tags and released into areas of the Gulf where there are Kemp's ridleys of the same age class. Select individuals will also be radio-tagged by NMFS and tracked for a week or so following their release.

If headstarting and other aspects of the recovery effort appear successful, the five agencies will tentatively plan similar transplant operations for next summer (at an estimated total annual cost of \$300,000). According to Jack Woody, Endangered Species Specialist for the FWS Albuquerque Regional Office, "It's going to be touch and go for the ridley, if it can be saved at all." But scientists are keeping their fingers crossed, hoping that—within 8 to 10 years—their work may bring "arribadas" to the shores of Padre Island, and again to Rancho Nuevo.



ENDANGERED SPECIES SCIENTIFIC AUTHORITY

Notices—September 1978

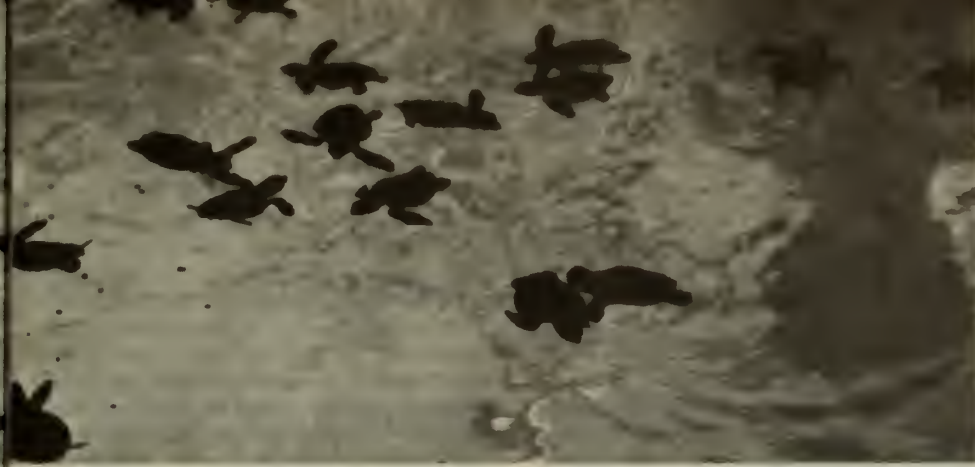
Composed of representatives from seven Federal agencies, the Endangered Species Scientific Authority (ESSA) was established by Executive order to insure the scientific soundness of governmental decisions concerning trade in endangered species of animals and plants. As the U.S. Scientific Authority for the Convention on International Trade in Endangered Species of Wild Fauna and Flora, ESSA reviews applications to export and import species protected under the Convention, reviews the status of wild animals and plants impacted by trade, monitors their trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

FINDINGS ISSUED FOR '78-'79 EXPORTS OF BOBCAT, LYNX, OTTER, AND GINSENG

In a final rulemaking, the Endangered Species Scientific Authority has modified export restrictions on this season's harvest of bobcats (*Lynx rufus*), lynx (*Lynx canadensis*), and river otters (*Lutra canadensis*), and on the 1978 harvest of wild American ginseng (*Panax quinquefolius*)—(F.R. 9/1/78).

The three furbearers and plant are listed under Appendix II of the trade Convention. As required under articles of the treaty, a permit from the country of origin certifying that export will not be detrimental to the species' continued survival must be issued before its products may be entered into international trade.

In line with the Scientific Authority's



The young ridleys will be nursed in a controlled environment for up to a year, or until they are large enough to withstand most marine predators.

Fish & Wildlife Service Photo

responsibility to determine whether export will be detrimental to the survival of these species in the wild, ESSA gave notice last year (see September 1977 BULLETIN) that available population data and existing State management plans generally did not support a finding in favor of export. Since that time, additional population information received and management initiatives taken by the States in behalf of these species prompted ESSA to propose approval of export for a majority of States (see August 1978 BULLETIN).

Export Findings

As summarized in the accompanying table, ESSA has found in favor of export of bobcats from 34 States and the Navajo Nation, setting quotas of 6,000 pelts from New Mexico and 2,000 pelts from Wyoming. Export of lynx pelts will be allowed from the States of Alaska, Idaho, Minnesota, Montana, and Washington, and river otter may be exported from 25 States. ESSA has also approved export of American ginseng roots harvested from 17 States.

(Note: ESSA "approval" constitutes its finding that export will not be detrimental to the survival of the species, and that it has no objection to issuance of export permits by the U.S. Management Authority for the Convention [the Service's Wildlife Permit Office]. Approval for this season does not limit the Management Authority from withholding permits on other grounds, however, nor should it be construed as a precedent for approval in the future.)

ESSA Has Moved

Although its mailing address will remain the same, the Endangered Species Scientific Authority staff has moved to new quarters on the 5th floor of the Matomic Building (1717 H Street, N.W., Washington, D.C.). ESSA's new phone number is (202) 653-5948.

ESSA Findings

State	Bobcat	Lynx	River Otter	American Ginseng
Alabama	A		A	
Alaska		A	A	
Arizona	A			
Arkansas	A		A	A
California	A			
Colorado	A			
Connecticut			A	
Delaware			A	
Florida	A		A	
Georgia	A		A	A
Idaho	A	A		
Illinois				A
Indiana				A
Iowa				A
Kansas	A			
Kentucky				A
Louisiana	A		A	
Maine	A		A	
Maryland			A	A
Massachusetts	A		A	
Michigan	A		A	A
Minnesota	A	A	A	A
Mississippi	A		A	
Missouri				A
Montana	A	A	A	
Nebraska	A			
Nevada	A			
New Hampshire			A	
New Mexico	A: Q6,000			
New York	A		A	A
North Carolina	A		A	A
North Dakota	A			
Oklahoma	A			
Oregon	A		A	
Pennsylvania				A
Rhode Island			A	
South Carolina	A		A	
South Dakota	A			
Tennessee	A			A
Texas	A			
Vermont	A		A	
Virginia	A			A
Washington	A	A	A	
West Virginia	A			A
Wisconsin	A		A	A
Wyoming	A: Q2,000			
Navajo Nation	A			

FINAL RULEMAKINGS FIVE WESTERN PLANTS LISTED AS ENDANGERED

In a final rulemaking, the Service has listed four species of plants native to California and one from Utah as Endangered (F.R. 9/28/78).

Following the Secretary of the Smithsonian Institution's report to Congress in January 1975, in which these species were cited as among 3,100 U.S. vascular plants thought to be "endangered, threatened, or extinct," the Service proposed an Endangered classification for the five plants (and nearly 1,700 other vascular plants) on June 16, 1976. Factors such as the past degradation and potential loss of habitat due to housing developments, agricultural use, the filling of coastal salt marshes, road and rail construction, off-road vehicle (ORV) use, and mining operations threaten the continued existence of the plants where they occur in California, northern Baja California, Mexico, and Utah, as none are listed for protection by State law.

The newly protected plants are the:

McDonald's rock cress (*Arabis macdonaldiana*), a member of the mustard family (*Brassicaceae*) native only to Red Mountain, Mendocino County, California. While about half of the species' habitat is on public land administered by Interior's Bureau of Land Management, a mining company anticipates removing as much nickel-containing soil from the public as well as private portions of Red Mountain as is feasible, possibly resulting in the extirpation of the plant.

San Diego pogogyne (*Pogogyne abramsii*), a member of the mint family (*Lamiaceae*) native to western San Diego County, California. Road widening and cloverleaf construction, the use of ORV's, housing developments, agriculture, and illegal dumping within the plant's range are all considered threats to the continued survival of this species.

Crampton's orcutt grass (*Orcuttia mucronata*), a member of the grass family (*Poaceae*) known only from one vernal lakebed in Solano County, California. Housing developments have destroyed many other vernal pools in this area, and increasing agricultural use may pose a threat to the plant in the eventual future.

Salt marsh bird's-beak (*Cordylan-*

thus maritimus spp. *maritimus*), a member of the snapdragon family (*Scrophulariaceae*) now confined to the Tijuana River estuary in San Diego County; Point Mugu, Ventura County; and northern Baja California, Mexico. The filling in of coastal salt marshes has reduced or eliminated this plant from much of its historical range, and plans to restore "natural" tidal flow to the marshes of Point Mugu Lagoon may eliminate an entire colony of the species.

A phacelia (*Phacelia argillacea*), a member of the waterleaf family (*Hydrophyllaceae*) surviving only in Utah County, Utah, where in 1977 only nine plants were found. The construction of a railway through this remaining population has seriously threatened the species' survival, and it is feared that any expansion of the access road to the railroad could result in the extinction of the plant.

Supporting Data/Comments Received

Status reports on the four California plants were prepared by the California Native Plant Society under contract to

the U.S. Forest Service. In addition to supplying information on habitat, distribution, and endangerment factors, the reports supported the listing of the McDonald's rock cress and the San Diego pogogyne as endangered in the hope that their habitats on Federal lands could be protected. Transplantation of Crampton's orcutt grass (if sufficient numbers are available) to a protected or artificial alkaline pool was also recommended, as was the need for additional research to identify unknown adverse factors influencing the Salt marsh bird's-beak.

The Service received no comments from Mexico or Utah on the proposed ruling, and the State of California offered no objection to the listing of the plants. Hundreds of comments were received from the public on the June 16, 1976, proposal; few were specific in nature, and all were summarized in the April 26, 1978, *Federal Register*.

The Service is now reviewing the status of all five plants to determine if additional protection under the Convention on International Trade in Endangered Species of Wild Fauna and Flora or other international agreements is warranted.

LEATHERBACK NESTING AREA PROTECTED AS CRITICAL HABITAT

A small area within the Virgin Islands—the only known major nesting beach under U.S. jurisdiction for the Endangered leatherback sea turtle (*Dermochelys coriacea*)—has been designated by the Service as Critical Habitat (F.R. 9/26/78).

Reportedly reaching weights of 1,600 pounds and lengths of 8 feet, the leatherback is the heaviest reptile in existence, ranging throughout the world. The turtle's status is extremely precarious, however, and much hope for its survival and recovery depends upon the maintenance of suitable, undisturbed nesting beaches.

The Service learned of the recently

discovered nesting site for leatherbacks on the island of St. Croix in 1977. Following a visit that summer by Service and other government officials, nearly 80 leatherback nests were located on the western end of the island. (The observers also found evidence of egg poaching, sand mining, and potential industrial development.) It is believed that the 1.9 mile by 0.2 mile strip of Sandy Point Beach designated is the only extensive nesting beach in the area, providing the proper sand size, slope, moisture, and temperature conditions for the successful development and hatching of leatherback eggs.

Background

On March 23, 1978, the Service proposed Critical Habitat designation for a strip of land 0.8 mile long and 0.1 mile wide (from mean high tide inland) on Sandy Point Beach (see April 1978 BULLETIN). A total of 14 comments were received in response to the proposal. Two respondents, Governor Juan Luis of the U.S. Virgin Islands and John Yntema of the Virgin Islands Department of Conservation and Cultural Affairs, expressed concern that the area proposed was too narrow to include all suitable nesting locations for the leatherback. In line with their recommendations, the Critical Habitat was widened to 0.2 mile.

Otto Tranberg (also of the Island's Department of Conservation and Cultural Affairs), noted in studying 1977 and 1978 activities that as many as 10 percent of the turtles were nesting adjacent to the area proposed for protection. His recommendations that the area be enlarged 0.7 mile on the south shore and 0.4 mile on the north shore were also adopted in the final ruling.

Governor Luis also commented on past cooperation between Federal agencies and the Virgin Islands in conserving the turtle, and noted the Islands' desire to acquire a major portion of the Critical Habitat in hopes of promoting protection efforts.

Proposed Rulemakings

Because of the changes brought by the 1978 amendments, we have refrained from summarizing September proposals at this time.

All pending listing and Critical Habitat proposals may have to be repropoed and/or augmented with additional information to insure full compliance with the new requirements. Departmental solicitors are working to determine how we must proceed to meet these stipulations, and we will give full notice of new proposal procedures as soon as this information is available.

Reference Note

All Service notices and proposed and final rulemakings are published in the *Federal Register* in full detail. The parenthetical references given in the BULLETIN—for example: (F.R. 9/28/78)—identify the month, day, and year on which the relevant notice or rulemaking was published in the *Federal Register*.

Amendments

(continued from page 5)

species or Critical Habitat determination. The amendments specify three additional steps to be taken during the listing process:

- notice to local government units whose boundaries include or are adjacent to the proposed Critical Habitat
- publication of the substance of proposed regulations in affected area newspapers
- publication of the substance of regulations in appropriate scientific journals.

A public hearing must now be held before designation of Critical Habitat. Also, where a species is listed but no Critical Habitat is to be determined, a public meeting shall be held when requested.

All listings and Critical Habitat determinations proposed after enactment of the amendments must be finalized within two years or be withdrawn. (Listings already proposed must be finalized within one year of the date of enactment.) The amendments also call for the periodic review—at least once every five years—of listed species.

Finally, to the maximum extent practicable, the Secretary must include in the proposed and final Critical Habitat rulings a description of activities which may adversely modify the habitat or which may be affected by the designation.

Agreements to Cover Plants

The amendments, under section 6 (c), now permit the Service to enter into cooperative agreements with the States for the conservation of Endangered and Threatened plants.

The use of Land and Water Conservation funds for the acquisition of habitat for Endangered or Threatened plants has also been authorized (under section 5(a)).

Recovery Planning

Under a new subsection 4(g), the Secretary is directed to develop and implement recovery plans for the conservation and survival of all Endangered or Threatened species, "... unless he finds that such a plan will not promote the conservation of the species." (The services of public and private agencies may be utilized for this purpose.)

Penalties/Enforcement

With regard to civil penalties, section 11(a) has been amended to make violations by commercial importers or exporters of fish, wildlife, and plants a

liability offense subject to a fine of \$10,000. (Violators are now subject to such penalties without a "knowledge requirement.") The maximum fine for noncommercial offenders under the strict liability provisions has been lowered from \$1,000 to \$500.

Under the criminal penalty provisions, "knowingly" replaces "willfully." Heads of Federal agencies are now authorized to modify, suspend, or revoke permits or licenses to import or export animals or plants or to operate quarantine stations for any person convicted of a criminal violation of the Act.

In both the criminal and civil enforcement sections, the requirement that a person "commit an act" has been removed, thereby allowing prosecution of offenses of omission.

Finally, persons taking Endangered or Threatened species on the good faith belief that they were acting to protect themselves or others from bodily harm are protected from civil and criminal penalties under the Act.

Exceptions for Raptors, Antiquities

Captive-held raptors and their progeny may be exempted from the Act's permit requirements, if held on the effective date of the amendments. (The Secretary is authorized to require documents, records, inventories, and other proof of eligibility.)

Also, antique articles (except scrimshaw) made from parts of products of listed species before 1830 are now exempted from the Act's provisions. The article must not have been modified with any part of a listed species after December 28, 1973, must be accompanied by appropriate documentation, and must be imported through a designated port of entry.) Individuals wishing to reclaim such articles confiscated since enactment of the 1973 Act may apply for the return of their items within one year of the date of enactment of the 1978 amendments.

Appropriations Reauthorized

Administration of the Endangered Species Act of 1973 by the Departments of Interior and Commerce is once again official, with appropriations now authorized for another year and a half. For Fiscal Year 1979, the Secretary of the Interior may utilize up to \$23,000,000 in carrying out his responsibilities under the Endangered Species Act, while up to \$12,500,000 is authorized for the 6-month period ending March 31, 1980.

Also, to assist the review boards and the Endangered Species Committee in carrying out their functions, the Secretary is authorized an additional \$900,000 for the same 18-month period.

Pending Rulemakings

We regret that anticipated schedules for issuance of proposed and final listing actions cannot be provided at this time. We hope to publish updated notices of pending rulemakings in the November *Bulletin*.

Endangered Species Symposium

Brigham Young University will sponsor "The Endangered Species Symposium: Philosophical, Managerial, and Biological Considerations" on December 7-8, 1978, at the Monte L. Bean Life Science Museum. Registration for the conference, due November 17, is \$40.00. For more information contact the Center for Health and Environmental Studies, 786 WIDB, Brigham Young University, Provo, Utah 84061.

Regional Briefs

(continued from page 2)

packet of publications and educational materials on endangered species. The 15,000 folders, to be distributed through the Extension Education Service, will contain a booklet on the Endangered Species Act, a poster, and fact sheets on several listed species.

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	33	227	260	3	18	21
Birds	67	144	211	3		3
Reptiles	11	47	58	10		10
Amphibians	5	9	14	2		2
Fishes	29	10	39	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	20		20	2		2
Total	197	440	637	39	18	57

Number of species currently proposed: 158 animals
1,850 plants (approx.)
Number of Critical Habitats proposed: 73
Number of Critical Habitats listed: 33
Number of Recovery Teams appointed: 64
Number of Recovery Plans approved: 18
Number of Cooperative Agreements signed with States: 22

September 30, 1978

Alaska Area. In September, 139 Aleutian Canada geese (*Branta canadensis leucopareia*) began their fall migration from Agattu Island in the Aleutian Islands to their wintering place in northern California. The geese—eliminated from Agattu by arctic foxes introduced in the early 1800's—were released on the island this summer in an attempt to reestablish a breeding population. (More than 100 of the birds were raised in captivity on Amchitka Island and at the Ser-

vice's Patuxent Wildlife Research Center during 1977.)

In hopes of learning more about the bird's mysterious migration patterns, biologists have equipped the "pioneer" geese with blue neck collars bearing 3-digit white lettering. Individuals are encouraged to report any sightings of the blue-collared geese to the nearest Service office, as such information will be vital to the development of conservation plans for this Endangered species.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

ALTERNATIVES TO GRAYROCKS MAY PRECLUDE JEOPARDY TO WHOOPING CRANE

In a December 8 biological opinion, the Service has concluded that the Grayrocks Dam and Reservoir Project, when considered along with other planned projects, is likely to jeopardize the continued existence of the whooping crane (*Grus americana*) and to destroy or adversely modify the crane's Critical Habitat.

The opinion followed consultation with the Rural Electrification Administration (REA) and the U.S. Army Corps of Engineers—the agencies respectively involved in funding and authorizing construction of the project—in compliance with Section 7 of the Endangered Species Act of 1973. (Section 7 requires all Federal agencies, in consultation with the Service, to insure that any actions they fund, authorize, or implement do not jeopardize the continued existence of an Endangered or Threatened species or result in the destruction or adverse modification of Critical Habitat.)

However, the Service document identifies two alternatives that could offset the impact of the project when completed—either by replacing the 23,000 acre-feet of cooling water the project will require each year, or by establishing an irrevocable trust that will generate income sufficient to insure maintenance and improvement of crane habitat on the Platte River. If adopted, the suggested alternatives would preclude jeopardy to the Endangered crane while permitting completion of the \$1.6 billion Missouri Basin Power Project, slated to provide electric power to more than a million people in eight Midwestern States.

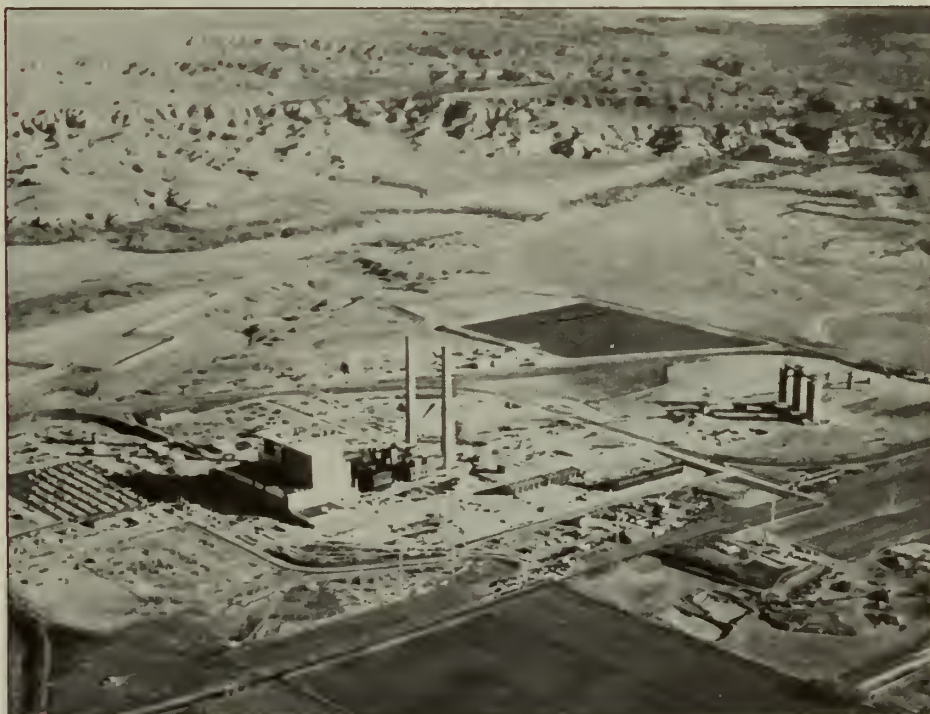
Cumulative Effects

The partially completed Grayrocks project involves a dam on the Laramie River (near Wheatland, Wyoming), a

tributary of the Platte River System that lies 275 miles upstream from the Critical Habitat of the whooping crane. The dam would provide cooling water to a nearby electrical generating plant, thereby removing an estimated 23,000 acre-feet of water annually from the already depleted river flow. The entire Missouri Basin Power Project (including the Grayrocks Dam and Reservoir, the Laramie River Station (a coal-fired steam electric generating facility), and associated transmission facilities and pipelines) would provide electric power to the States of Colorado, Nebraska, North Dakota, South Dakota, Wyoming, Montana, Iowa, and Minnesota.

In developing its opinion on anticipated project impacts, the Service's consultation team considered the cumulative effects of the Grayrocks project *in combination with* all related water development projects "reasonably expected to be completed during the life of the project." Together, estimated depletions as a result of the Grayrocks Dam and Reservoir, the Wildcat Reservoir-Pawnee Power Plant, the Gerald Gentlemen Power Plant, the planned Corn Creek Irrigation Project, and the projected agricultural ground water pumping (in Nebraska) are expected to reduce the flow of the Platte River by an average

(continued on page 6)



The Laramie River Station, an electric generating facility expected to tap 23,000 acre-feet of cooling water annually from the Grayrocks Reservoir.

Photo by Jay Sheppard, Fish and Wildlife Service

Regional Briefs

Endangered Species Program regional staffers have reported the following activities for the month of November:

Region 1. A recently completed interagency survey of the California condor (*Gymnogyps californianus*) indicates the species' numbers are continuing to decline. No more than 30 condors (adults and juveniles) are believed to survive.

This fall, approximately one-third of the entire remaining habitat of the San Diego pogogyne (*Pogogyne abramsii*) was lost to road expansion and housing development, prior to the initiation of Section 7 consultation with the Service by the Veterans Administration. About 250 acres in San Diego County (where this member of the mint family occurs in vernal pools) was cleaned of all vegetation.

Region 2. Regional Endangered Species and Federal Aid representatives met with the Texas Parks and Wildlife Department to evaluate Federal non-game projects, encourage the signing of a Section 6 (endangered species) cooperative agreement with the Service, and discuss other cooperative efforts within the State.

Regional personnel also met with representatives of the U.S. Forest Service's Forest Range and Experiment Station, the Bureau of Land Management, and the New Mexico Game and Fish Department to outline cooperative action plans for the bald eagle (*Haliaeetus leucocephalus*) and American peregrine falcon (*Falco peregrinus*) in New Mexico and Arizona in 1979.

Region 4. The pair of red wolves (*Canis rufus*) released this past Janu-

ary on Bulls Island, South Carolina (in the Cape Romain National Wildlife Refuge), was successfully recaptured in mid-October after more than 9 months of freedom. The wolves were found to be in excellent health at the time of recapture by project personnel from the Albuquerque Regional Office. Breeding by the pair was thought to be a possibility, but no firm evidence was found of any births. The Service believes the success of this translocation experiment indicates that handling and subsequent release into unfamiliar habitat will not be a barrier to future permanent reestablishment efforts in other southeastern locations.

Region 5. Endangered plant status surveys have been completed for all six New England States. (Listing recommendations will soon be forthcoming.)

The first request for reinitiation of consultation was received from the Army Corps of Engineers on possible impacts of the proposed relocation of 1.3 miles of the Clinch River on listed mussels.

Upcoming CITES Notices

To insure adequate time for comment, we would like to alert our readers to the imminent publication of notices relating to U.S. actions under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

The Service's Wildlife Permit Office anticipates publication of three items in the *Federal Register* around the middle of January:

(1) Notice on the extension of public comment (for 30 additional days) on the procedures for changing the appendices to the Convention;

(2) Notice of potential rulemaking, summarizing foreign proposals to amend the Convention appendices, with provision for public comment; and

(3) Notice describing future actions to be taken by the U.S. and Convention parties, and plans for future public participation therein, regarding the status of native species protected by the Convention. (The Service also plans to publish a notice on or about January 25 stating its determinations concerning U.S. proposals to amend the Convention appendices.)

An additional notice will invite the public to meetings on several Convention issues on January 31, February 1, and March 8, 1979 (see November 1978 BULLETIN).

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CONSERVATION EFFORTS HELPING BALD EAGLE AND OTHER NEW YORK SPECIES

Department of
Environmental
Conservation

This past spring, a two and a half week old eaglet was placed in the sole remaining active bald eagle aerie in New York State in exchange for an egg which the breeding pair had been incubating. Within 45 minutes, "Tarzan" was adopted by the adult birds and, by early July, had successfully fledged.

The two mating bald eagles (*Haliaeetus leucocephalus*) have nested at this site just south of Rochester for at least the last 13 years, but managed to produce only one fledgling in all this time. Researchers in New York and at the Service's Patuxent Wildlife Research Center have found the shells of eggs produced by the pair to be as much as one-third thinner than normal—the result of persistent pesticide residues in the birds' tissues—often precluding normal incubation.

This last of 63 once-active bald eagle nests in New York is considered a great natural treasure by endangered species specialists from the State's Department of Environmental Conservation, who remain hopeful that a breeding eagle population may someday be restored to the area. After consultation with 22 eagle experts across the country, it was decided that, based on past reproductive failures, there was little chance of this eagle pair successfully hatching one of its own eggs. But the two were considered as excellent foster parents, and the Department's regional staff began setting the stage for an eagle-for-egg transfer early in April—one of the few times ever attempted in eagle research.

Tarzan, a 2-pound eaglet named and hatched from captive birds at the Service's Patuxent Wildlife Research Center in Maryland, was flown to New York aboard a United Airlines plane literally on the lap of specialist Michael Allen. The endangered species team later scaled a tall tree to reach the aerie for which Tarzan was destined on April 24, making the switch in a matter of minutes. (The incubating egg, although later found to have added, was then taken in a portable incubator to Cornell University for attempted hatching.)

At the age of seven and a half weeks, when Tarzan was just begin-

ning to test his wings, project personnel climbed to the nest and fitted the eaglet with a Service aluminum leg-band as well as a bright plastic leg-band which can be read from a quarter-mile away. The activities of Tarzan and his foster parents were continuously monitored from a nearby blind, where biologists spent much of their time gathering data on feeding rates and food composition, and generally observing rearing activities up to the time of fledging.

Well-rounded Program

Perhaps the most comprehensive endeavor of its kind, New York's bald eagle program (also involving "hacking" of eagles to the wild, habitat protection, monitoring of wintering eagles, and other activities) represents only a portion of the State's conservation efforts on behalf of a variety of endangered and threatened wildlife.

New York was among the first 11 States to sign cooperative agreements

with the Service in June 1976, making the State eligible to receive two-thirds matching fund assistance for the study and protection of endangered species. Now into its third year of program operation, New York's Endangered Species Unit—an arm of the Department of Environmental Conservation—is actively involved with some 30 species of wildlife. Fifteen of the species are officially protected under New York's endangered species legislation, enacted in 1970 and designed to provide for the establishment of a State endangered species list. Eight of the 15—the Indiana bat (*Myotis sodalis*), gray wolf (*Canis lupus*), bald eagle, peregrine falcon (*Falco peregrinus*), Chittenango ovate amber snail (*Succinea chittenangoensis*), longjaw cisco (*Coregonus alpenae*), blue pike (*Stizostedion vitreum*), and shortnose sturgeon (*Acipenser brevirostrum*)—are also federally listed.

While New York's endangered spe-
(continued on page 4)



"Tarzan," attended by a foster parent in the last active bald eagle nest in New York State.

State Report

(continued from page 3)

cies law presently concerns itself with protection of these species, it does not address the all important factor of habitat protection. Recognizing this deficiency, two separate legislative proposals have been submitted in hopes of authorizing needed habitat preservation measures in the coming year.

Headed by Peter Nye, the Endangered Species Unit also employs a professional staff divided according to the various species disciplines: mammals, birds, reptiles and amphibians, and invertebrates. Staff specialists located both at the Department's central office and at several regional points around the State round out the program.

The Unit's budget for operation of its many activities has increased from about \$80,000 the first year to approximately \$450,000 for the current fiscal year, about two-thirds of which is appropriated from Federal Endangered Species Grant-in-Aid funding. Most of the State's matching share is derived from the sale of hunting and fishing licenses.

While the Unit itself is involved in much of the species research, many additional projects are accomplished under contract to take full advantage of available expertise. About 25 percent of the entire budget is allotted to contract projects.

Bald Eagle Activities

The most active effort since inception of the State's endangered species program has involved the bald eagle. In a separate attempt to increase the number of breeding eagles in the State, specialists have also been hacking eagle fledglings back into the wild—an activity similar to that being conducted with peregrines through much of the east. New York's eagle hacking program was designed in 1976, with the assistance of Dr. Tom Cade of Cornell University's Peregrine Fund, in an attempt to bypass reproductive difficulties normally experienced as the result of pesticide contamination. Now in its third year, 11 young eagles have been successfully raised and released from the State's hacking towers in the only project of its kind involving bald eagles. Montezuma National Wildlife Refuge in Central New York was selected as the ideal hacking site for its abundant fish supplies, limited disturbance, vast suitable habitat, and historical bald eagle breeding activity.

"We believe we have demonstrated



Bald eagle hacking tower within the Montezuma National Wildlife Refuge.



Two of four bald eaglets reared in a manmade nest at Montezuma this year.

that bald eagle nestlings can be successfully reared in the wild in this manner," Nye explains. "Our first attempt was in 1976 when two bald eagles were successfully hacked. Last summer, we reared five more and had the unexpected bonus of having one of our first-year birds return to the area late in the summer, confirming the fact that these birds could survive a winter and learn to feed on their own."

All four of the immature eagles hacked at Montezuma this past summer were offspring of captive eagles from the Patuxent Wildlife Research Center.

The eaglets were housed in two man-made nests atop adjacent 35-foot towers during the hacking period, while observers kept watch over the birds through a closed circuit video system. Project assistants scaled the tower only to provide food—carp and bullheads caught nearby and small road-killed animals such as squirrels and rabbits, found to contain low levels of pesticides and other contaminants.

Birds hacked at the Montezuma site probably follow the pattern of other immature eagles, spending several years in apparent random wandering after fledging. The birds develop the familiar white heads and tails by the time they reach sexual maturity at about age 5, when it is believed that they return to the general area of their birth to nest.

The monitoring of wintering bald eagles, especially the concentration of birds that winters in southeastern New York, constitutes the third major segment of the State's eagle program. The Sullivan County area may well be the largest single bald eagle wintering convocation in the northeastern U.S., supporting a population of over 30 birds from November through March. Each winter, the arrival and dispersal dates, overall numbers of adult and immature eagles, roosting and feeding locations, prey base and chemical contamination levels, and disturbing influences are monitored. Efforts begun last winter are continuing to live capture a small portion of the wintering birds and fit them with radio telemetric devices to ascertain their movement patterns and utilization areas. (No one is certain as to where these birds come from, but this knowledge is important to gaining an overall understanding of the "fluid" north Atlantic bald eagle population in order to promote its protection.)

Endangered species specialists are also collecting eagle carcasses to determine mortality causes and toxicant levels. One eagle found dead last year was extremely emaciated, and—although drowning was determined to be the primary cause of death—the high levels of DDT, PCB's, dieldrin, and chlordane evident in the bird's tissues were thought to have contributed to its demise.

Other State efforts on behalf of the eagle include habitat protection through cooperation and written agreements with the City of Rochester (establishing the 100-acre tract surrounding the only active nest as a sanctuary) and with the Orange and Rockland Utilities Company in Sullivan County, where certain areas have been restricted from public access. Management plans are also being developed for the protection of eagles and their

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habitats, and the State has also submitted recommendations to the Service for bald eagle Critical Habitat designation.

Other Bird Work

In consultation with the Service's Eastern Peregrine Falcon Recovery Team (of which Eugene McCaffrey, the supervisor of New York's nongame section, is a member), 32 historic peregrine nesting sites are now being examined to determine their feasibility as hacking sites. The State is assisting in the funding of the ongoing releases of the Peregrine Fund in New York. Two hacking stations were operated this summer, resulting in two fledgling peregrines being successfully released. Unfortunately, particular problems with great horned owls (*Bubo virginianus*) occurred at these sites, and owl control efforts are now being pursued by the Department as ground-work for the anticipated releases in 1979.

The monitoring and management of New York's two osprey (*Pandion haliaetus*) populations—centered within the Adirondack Mountains and the eastern end of Long Island—is continuing. Specialists have counted 97 active osprey nests in the State which this year produced 105 young. (Due to its precarious status, the osprey has been listed as endangered by New York.)

Other bird conservation efforts involve the collection of baseline data in order to determine the status of the common loon (*Gavia immer*), northern harrier (*Circus cyaneus*), golden eagle (*Aquila chrysaetos*), bluebird (*Sialia sialis*), logger-head shrike (*Lianeus ludovicianus*), Ipswich sparrow (*Passerulus princeps*), roseate tern (*Sterna dougalli dougalli*), and least tern (*Sterna albiglans*). The status and distribution of the common raven (*Corvus corax*) and the spruce grouse (*Canachites canadensis*) are being investigated by researchers at New York's College of Environmental Science and Forestry (ESF), under contract through New York's endangered species program.

Mammal Studies

Similar baseline work is also being conducted by the Unit's mammal specialist on the eastern woodrat (*Neotoma floridana*), and yellow-nosed (or rock) vole (*Microtis chrotorrhinus*) whose status has not yet been determined in the State. Other mammal species of interest being investigated are the pigmy shrew (*Microsorex hoyi*), long-tail (or rock) shrew (*Sorex dispar*), and northern bog lemming (*Synaptomys borealis*).

In the forefront of the mammal work,

however, is the Indiana bat whose occurrence in a series of caves in northern New York presently appears to be its only known location in the northeast, and the northernmost location for this bat species. The cave complex and associated Indiana bat populations are monitored during the winter hibernation period to determine the dates of their arrival and dispersal, overall number of resident bats, and location of typical bat clusters. Over 600 individuals were found in four separate hibernacula sites this past spring, with two of the bats bearing Service wing bands. Already this winter, over 1000 Indiana bats have been observed here; two banded individuals were determined to be 14 years old, apparently the record for known longevity of the species so far. (New York has asked the Service to designate the Glen Park Cave complex as Critical Habitat for the bat.) Attempts are actively being made to protect this important area through an agreement with the landowner or possible acquisition. Statewide investigation of other likely cave locations where bats have been reported is ongoing. A strong possibility exists that other locations containing social bats (as Indiana bats are sometimes called) will be revealed.

The ecology, status, and distribution of the bobcat (*Lynx rufus*) in New York remains under investigation under a contract with Dr. Reiner Brocke of the College of ESF. The Unit has also retained Dr. Brocke and the College in an attempt to determine the feasibility of reestablishing the puma (*Felis concolor*) to New York State, where a viable breeding population may someday be restored. Studies are also being pursued which will determine the feasibility of restoring populations of the lynx, gray wolf, and certain large herbivores such as moose and elk to the State.

Amphibians and Reptiles

The bog turtle (*Clemmys muhlenbergi*) is the leader in this category. A statewide survey of all historical and present bog turtle habitat has been completed, and 62 historical sites have been mapped for the species in New York. (Sixteen percent were found to contain bog turtles.) The State is now in the process of acquiring prime turtle habitat and is developing a management plan for the species on that area. A comprehensive bibliography on the species has also been prepared by the herptile specialist, and should be available shortly through the Smithsonian Institution's bibliographic series.

The eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*), timber rattlesnake (*Crotatus horribilus*), blanding's turtle (*Emyodoides blandingi*),



A bog turtle (Millerton Dutchess County).

red-bellied turtle (*Pseudemys rubriventris*), and five species of sea turtles (*Chelonia mydas*, *Eretmochelys imbricata*, *Caretta caretta*, *Lepidochelys kemp*i, and *Dermochelys coriacea*) are also under investigation, particularly in relation to occurrence and possible negative influences. The massasauga rattlesnake has been found (historically and currently) in two locations, with one additional potential site now being surveyed (all in central and western New York). Both known locations are protected by their owners, but the snake is thought to be on the decline in the State.

Information is also being gathered on the Jefferson salamander (*Ambystoma jeffersonianum*), eastern tiger salamander (*Ambystoma tigrinum*), spotted salamander (*Ambystoma imaculatum*), and the cricket frog (*Acris crepitans*).

Fish

Although no active endangered fish program presently exists within the Department, plans are under way to get this segment of New York's effort activated during fiscal year 1979-80. Contractual work with the Boyce Thompson Institute involving the Endangered shortnose sturgeon in the lower Hudson River has been conducted. (with Federal assistance through the anadromous fish program).

New York representatives are also members of the Shortnose Sturgeon and Blue Pike Recovery Teams.

Invertebrates

The existence of the Chittenango ovate amber snail has been confirmed in only one location in the world—a very limited talus-spray zone area surrounding a waterfall in central New York. Recently federally listed as a Threatened species, this land snail has been characterized as a "living fossil" (a relic of the pleistocene era).

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ALTERNATIVES

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of 172,000 acre-feet annually by the year 2,000. Based on anticipated water usage, depletions are likely to increase to more than 300,000 acre-feet annually by the year 2020, a 35 percent loss from present conditions.

[Based in part on the intent of the Endangered Species Act of 1973 and "the need to take an ecosystem approach in dealing with environmental matters," the Department of the Interior Solicitor determined in a July 19, 1978, opinion that the 1973 Act requires the "consideration of cumulative impacts on an endangered or threatened species' ecosystem before determining whether a particular Federal project will violate the prohibitions of Section 7." The Solicitor further indicated the need for applying a "rule of reason" in determining which possible impacts should be considered, based on the likelihood of their completion.]

Expected Impacts

Specifically, the Service has found that the anticipated reduction in river flow may actually benefit bald eagles (*Haliaeetus leucocephalus*) in areas where depletions will result in narrowing river channels and increasing vegetation. Wintering eagles should also be attracted to the increased fishery and waterfowl habitat produced by the Grayrocks Dam and Reservoir.

But the Service believes the decrease in wetland areas in the Platte River associated with reduced stream flows will have a significant adverse impact on the crane and its habitat. Biologists estimate there has already been a 60-65 percent loss of sandbar and wet meadow areas in the past 40 years within the designated Critical Habitat, and a continued trend of decreasing river flows through the area would likely reduce channel widths, possibly resulting in the destruction of a significant portion if not all of these essential stopover points.

The Platte River is one of the principal resting and feeding areas for 75 of the world's remaining 100 wild whooping cranes during their spring and winter migration between Canada and the Aransas National Wildlife Refuge in Texas. (Although the cranes numbered only 13 adults and 2 young as a result of illegal shooting and habitat destruction in 1941, efforts by both the Canadian Wildlife Service and the Fish and Wildlife Service to boost hatching success and to breed the birds in captivity for release to the wild have been largely responsible

for their comeback.) The Platte is an especially important stopover area during the cranes' spring migration when they need open, undisturbed expanses devoid of significant vegetation for a radius of 75-100 yards for roosting. The sand and gravel bars and shallow waters within the designated Critical Habitat are among the last suitable points for the cranes to rest and feed before the last leg of their journey to Canada's Wood Buffalo Park, where they begin to lay eggs almost as soon as they arrive.

With the continuing loss of wetland habitat, it is feared that—in years of poor rainfall—the Platte River may offer the only remaining feeding and roosting sites for the cranes along the Central Flyway.

Background

In accordance with Section 7, the Corps initially requested consultation on the Grayrocks Dam and Reservoir project in October 1977 (under existing Section 7 "guidelines"), prior to issuance of a permit under Section 404 of the Federal Water Pollution Control Act. At that time, the Service's Denver Regional Director determined that a 3-year study would be required to measure the effects of water depletion on the crane's habitat before an opinion could be rendered. A Corps construction permit was subsequently issued in March 1978, although construction on Grayrocks actually began in July 1976.

The Service's Interagency Cooperation Regulations, officially implementing Section 7 and making consultation mandatory, were finalized in January 1978 and, in April 1978, REA requested consultation under the new regulations. (REA had previously granted a loan guarantee to Basin Electric for project construction in December 1976). However, while a consultation team was appointed to consider the impacts of the project at that time, a question on the need to consider the cumulative effects of other actions impacting the Platte River System became an issue during a similar consultation. Further action was therefore suspended until an opinion on the appropriateness of considering cumu-

TOP LEFT: Narrowing channel widths and increasing vegetation evident in this photo of the Platte River are the result of continuing water depletion. **TOP RIGHT:** Grayrock Dam Construction Site. **BELOW:** The remaining sandbar and wet meadow areas shown within the designated Critical Habitat are vital stopover points along the crane's migration corridor.



lative effects could be obtained from the Department's Solicitor.

The Service then scheduled a meeting with both agencies on the consultation request in October. But when authorization of appropriations for the Endangered Species Act expired as of September 30, consultation activities were again suspended.

Exemption Under Consideration

Upon enactment of the 1978 Amendments to the 1973 Act (see October 1978 BULLETIN), the Secretary was directed to render a biological opinion on Grayrocks and, subsequently, the newly established Endangered Species Committee was to proceed to consider exempting the project from the requirements of Section 7. (As provided in the new legislation, the seven-member Committee is to consider exemption of both the Grayrocks Dam and Reservoir and TVA's Tellico dam within 90 days of enactment of the Amendments. Both projects could be automatically exempted if no decision is forthcoming at the end of this speci-

Photo by Jay Sheppard, Fish and Wildlife Service



fied period.)

In addition, as mandated by the 95th Congress, the Secretary of the Interior, the Administrator of REA, and the Secretary of the Army—upon issuance of the Service's biological opinion—are to require "... such modifications in the operation or design of the [Grayrocks] project as they may determine are required to insure that actions authorized, funded, or carried out by them ..." do not jeopardize the crane or its Critical Habitat.

On January 8, the Committee scheduled public hearings on the Grayrocks and Tellico' issues (F.R. 12/22/78) in Cheyenne, Wyoming (on Grayrocks), in Knoxville, Tennessee (on Tellico),

and in Washington, D.C. (on both projects) to provide all interested parties an opportunity to submit their views and recommendations for consideration as part of the public record.

At the time of this writing, Interior officials were working to finalize the Department's recommendations on both the Grayrocks and Tellico projects for consideration by the Endangered Species Committee. Reasonable and prudent alternatives to the projects, suggested mitigation and enhancement measures, and economic impact considerations are to be discussed in the Departmental document, all for review by the Committee before the February 8 exemption deadline.

SETTLEMENT PENDING ON GRAYROCKS SUIT

Just prior to issuance of the Service's biological opinion on the impacts of the Grayrocks project (see accompanying story), parties to a suit surrounding the issue arrived at an "out-of-court" agreement which would also involve the creation of a special trust fund for whooping crane conservation.

The agreement followed allegations by the National Wildlife Federation, National Audubon Society, and the State of Nebraska that two Federal agencies involved in the Grayrocks Dam and Reservoir project had failed to comply with several environmental laws in authorizing the construction project. Among other things, the three parties charged the Rural Electrification Administration (REA) and the Army Corps of Engineers with (1) failure to prepare an adequate Environmental Impact Statement addressing the cumulative impacts of Grayrocks and associated projects on the crane's Critical Habitat as well as downstream fish and wildlife impacts, (2) failure to consult with the Secretary, to insure that the project will not jeopardize the continued existence of a listed species or its Critical Habitat, as

required under Section 7 of the Endangered Species Act, and (3) violation of Interior's regulations in making irreversible and irretrievable commitments of resources prior to completion of consultation.

In an October 1978 decision, the Federal District Court for the Nebraska District held that REA (in granting the loan guarantee for the project) and the Corps (in issuing a 404 permit for construction) had indeed violated certain provisions of both the National Environmental Policy Act (NEPA) and the Endangered Species Act, and ordered construction on the Grayrocks dam and reservoir halted. In an attempt to reach out-of-court settlement, the Basin Electric Power Cooperative—project manager for the Missouri Basin Power Project and a party in the litigation—subsequently agreed to limit consumptive use of water to 23,500 acre-feet annually and to put \$7.5 Million in trust expressly for preservation and maintenance of the affected whooping crane habitat. The trust fund concept along with its associated provisions received the support of all parties in the suit.

RECOVERY TEAM FOR SEA TURTLES

The National Marine Fisheries Service, in cooperation and consultation with our Service's Atlanta Regional Office, has appointed a Sea Turtle Recovery Team.

The team held its first meeting in December, and plans to meet again on January 23rd. This second meeting will be followed with a public meeting in Tampa on January 24th to report on progress in sea turtle program planning (as a follow-up to last year's open meeting in Tampa).

Members of the recovery team, which intends to plan comprehensively for the recovery of all six listed sea turtles, are:

- Ron Odom, Georgia Department of Natural Resources
- Glen Ulrich, South Carolina Marine Resources Division
- Charles Futch, Florida Department of Natural Resources
- A. E. Dammann, Caribbean Fishery Management Council (Puerto Rico)
- Bill Hillestad, Southeastern Wildlife Services (Georgia)
- Larry Ogren, National Marine Fisheries Service
- Otto Florschutz, Fish and Wildlife Service
- Milton Kaufmann, Monitor International, Inc.
- Robert Jones, Southeastern Fisheries Association
- Donald Geagan, National Marine Fisheries Service

NMFS Proposes Critical Habitat for Leatherback

The National Marine Fisheries Service has proposed a companion ruling (to that finalized by our Service on September 26, 1978) to designate Critical Habitat for the leatherback sea turtle (*Dermochelys coriacea*) in waters adjacent to Sandy Point Beach on St. Croix, U.S. Virgin Islands.

For details on the subject proposal, kindly consult the November 29, 1978, *Federal Register*, or contact the Office of Marine Mammals and Endangered Species, NMFS, National Oceanic and Atmospheric Administration (U.S. Department of Commerce), Washington, D.C. 20235.

Comments on the proposal are due by January 29, 1979.

State Report

(continued from page 5)

Efforts are now being directed at assessing its present status, and identifying and evaluating any limiting factors. (The Service has been petitioned to designate Critical Habitat for this land snail in New York.)



A rare photo of Chittenango ovate amber snails.

The Karner blue butterfly (*Lycaeides melissa samuelis*), associated with the sandy, pine barren areas of New York has continued to suffer from great developmental pressures resulting in a consistent decline in available habitat. (The Service has proposed listing of the butterfly as Threatened and designation of its Critical Habitat in New York.) Following surveys conducted under contract by two expert lepidop-

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terists, ten New York populations of Karner blues have been identified (nine of which are presently threatened by human development).

Two additional lepidopterans, the buck moth (*Hemileuca maia*) and Hessel's hairstreak butterfly (*Mitoura hesseli*) were revealed as possible endangered species during the survey effort and are now being investigated.

The Endangered Species Unit has prepared a pamphlet on the State's threatened, endangered, and extirpated wildlife in addition to several slide-tape presentations and display panels concerning the program effort in New York.

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	33	227	260	3	18	21
Birds	67	144	211	3		3
Reptiles	11	47	58	10		10
Amphibians	5	9	14	2		2
Fishes	29	10	39	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	20		20	2		2
Total	197	440	637	39	18	57

Number of species currently proposed: 158 animals
1,850 plants (approx.)

Number of Critical Habitats proposed: 73

Number of Critical Habitats listed: 33

Number of Recovery Teams appointed: 65

Number of Recovery Plans approved: 18

Number of Cooperative Agreements signed with States: 22

November 30, 1978

CORRECTION

In our November report on Florida's endangered species activities, new information on the status of the Silver rice rat was received too late for inclusion. On the basis of recently published identification parameters, Florida researchers now believe that the specimens observed in this year's study were not *Oryzomys argentatus*. To date, only two individuals of this species have been seen, and the current study has thus far failed to confirm the survival of the rodent.



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Abbreviations:

E=Endangered

T=Threatened

C.H.=Critical Habitat

S/A=Similarity of Appearance



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COMMITTEE EXEMPTS GRAYROCKS; DENIES EXEMPTION FOR TELlico DAM

In the first session of its kind, the newly created Endangered Species Committee met on January 23 and voted to deny an exemption for TVA's nearly completed Tellico dam while conditionally exempting the Grayrocks project from compliance with Section 7 of the Endangered Species Act.

Established through recent amendments to the 1973 Act (see October 1978 BULLETIN), the cabinet-level Committee was directed to consider exempting the two projects, thereby ruling on the fate of the Endangered species with which they conflict.

As defined by the new law, Interior Secretary Andrus serves as Committee chairman, with five additional voting (permanent) members and one collective vote cast by the State representative(s) for the affected States(s). Agriculture Secretary Bergland, Army Secretary Alexander, Council of Eco-

nomic Advisors Chairman Schultze, Environmental Protection Agency Administrator Costle, and National Oceanic and Atmospheric Administration Administrator Frank attended the meeting along with Secretary Andrus, all voting in person as required by the amendments. Wyoming's Governor Ed Herschler and Nebraska's Assistant State Attorney General, Paul Snyder, shared the vote on Grayrocks, while William R. Willis, Jr., voted for Tennessee on the Tellico exemption.

As expressly mandated by the 1978 amendments, Committee members were to exempt the Tellico and Grayrocks projects only if they determine that (1) there are no reasonable and prudent alternatives to the projects and (2) the benefits of the projects clearly outweigh the benefits of alternative courses of action consistent with conserving the affected species

or their Critical Habitats, *and* the projects are in the public interest.

In the case of the Tellico project, the unanimous decision by the Committee essentially stops completion of the dam and reservoir, which would have impounded the Critical Habitat of the snail darter (*Percina tanasi*) along the Little Tennessee River. In motioning for a Committee vote denying exemption for the dam, Charles Schultze questioned the cost-effectiveness of the Tellico project, saying "the costs clearly outweigh the benefits. It would be difficult to say there are no reasonable and prudent alternatives to this project," Schultze added.

A December 1978 TVA report puts forth two alternatives: (1) developing the reservoir and (2) removing part of the dam and developing the river. In its "Views and Recommendations," In-

Continued on page 6



Photo by Steve Hillebrand, U.S. Fish & Wildlife Service

Secretary Andrus (center) chaired the first session of the cabinet-level Endangered Species Committee on January 23.

Endangered Species Covered

One day soon, you may call your "county agent" for advice on spraying fruit trees, and at the same time learn about Endangered species you could find in your own back yard.

This kind of information will be made available through the cooperative efforts of three Federal agencies—our Service, the Department of Agriculture's Federal Extension Service (FES), and the Commerce Department's National Oceanic & Atmospheric Administration (NOAA)—that in 1977 agreed to join hands to boost our

national extension education capability. Taking full advantage of a tried and proven administrative machinery and delivery system, the Fish and Wildlife Service is now exchanging information on endangered species, animal damage control, and other fish and wildlife topics using the same network that has for over 50 years brought agricultural tips to farmers and, more recently, reached the many users of the Nation's marine resources.

Becoming fully operational this past May, the Service's Office of Extension

Education has already forwarded more than 200 special mailings of bulletins, news releases, and other publications to NOAA's Sea Grant Program and the Federal Extension Service for distribution by State and county extension co-operators. But maintaining a cooperative national system of fish and wildlife education is only part of its mission, as the Office also strives to (1) advise FES and Sea Grant's Marine Advisory Service of fish and wildlife programs appropriate for extension education and (2) encourage the design, development, and support of such programs and related educational materials in our own Service.

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A Growing Network

The extension education concept arose from the needs of farmers for information on scientific agricultural knowledge and methods in the early 1900's. Enacted in 1914, the Smith-Lever Act created the Federal Extension Service as a cooperative educational program oriented toward the rural citizen, involving professional staff at the Federal, State, and local level. Administered by the Department of Agriculture, the Act also provided for Federal matching fund assistance to the States and initiated cooperation at local levels through a network of county agents and workers. As a result, extension became an important foundation of the agriculture industry, and has played a role in the success of modern agriculture in the U.S.

The Federal Extension Service addresses four program areas: (1) agriculture, forestry, and natural resources; (2) community resource development; (3) home economics; and (4) 4-H youth. Knowledge from expert sources in these areas is made available to the public through county agents as well as the State extension service, an off-campus arm of Land Grant universities generally associated with the State agricultural experiment station and with university research and resident teaching. Not only is the public reached through informational and educational materials and programs, but State extension offices have special radio-television-press facilities,

Through Extension Education

staffed with communications professionals to reach the public en masse.

In 1976, the entire cooperative extension system was financed at nearly \$500 million, with over \$300 million coming from State and local sources. More than 12,000 county agents and workers are now employed to carry out the program, with 4,500 staffers working at Land Grant universities and 200 positions at the Federal level.

Under separate authority, the Marine Advisory Service—a branch of NOAA's Sea Grant Program—was initiated in 1966 primarily to channel educational materials (and technical advice) to individuals involved in marine-related commercial activities. The Advisory Service has its own specialists at the Federal level, and funds advisory personnel at Sea Grant universities throughout the country under a plan similar to that accomplished under Agriculture. About 250 Sea Grant advisors and county "agents in hip boots" are employed in educational/advisory programs, distributing

"It's easy to understand our enthusiasm, when you realize we can now tap into a multi-million dollar communications network that reaches people in every county in the Nation."

information on everything from gill netting to fish cookery.

Through our recent agreements with Agriculture and Commerce, materials on an endless array of fish and wildlife management topics can now be shunted through these established extension and marine advisory networks, where they will be readily accessible to the interested public.

Dan Stiles, acting chief of our Service's Extension Education Office, believes "it's easy to understand our enthusiasm, when you realize we can now tap into a multi-million dollar communications network that reaches people in every county in the Nation. Good natural resource-oriented educational information we offer USDA's machine can be effortlessly magnified a thousand fold and delivered to the people." Stiles also sees the system

as "reversible," in that we can also be alerted to natural resource problems anywhere in the country in a very short time, enabling a quicker response to local needs.

Nearly all the credit for our Service's recent involvement in extension education goes to Jack H. Berryman, chief of the Service's Office of Extension Education until December 1978 (when he retired from the Service to serve as Executive Vice President of the International Assn. of Fish and Wildlife Agencies). Berryman has long recognized the need for a closer working relationship between wildlife managers and the concerned public, and believes that extension education may help bridge the gap, thus furthering the goals of the Endangered Species Program. Informative materials developed by the Service (as well as workshops and short courses sponsored cooperatively through Land Grant and Sea Grant universities) on Endangered species legislation, implementing regulations, misunderstood terms such as "Critical Habitat," and on the listed species themselves—when made available to local citizens—can promote a better understanding and support for conservation efforts. "For this reason," Berryman explains, "extension education considerations should be included in all recovery planning for Endangered and Threatened species."

State Agreements/Projects

The entire extension system now aims to serve all people, with services in the 50 States, Puerto Rico, Guam, the Virgin Islands, and the District of Columbia. Regional endangered species specialists are reviewing existing agreements with Land Grant and Sea Grant universities and State Extension Service personnel in an effort to negotiate "updated" versions, so that fish and wildlife extension education may be provided throughout the network. Memoranda of understanding on extension education have been signed with 24 States and one territory thus far, and others are in various stages of negotiation.

Cooperative States are already at

work on five Endangered species projects under the Service's Extension Education Program:

- The Massachusetts Division of Fish and Wildlife has drafted a brochure on the Plymouth red-bellied turtle (*Chrysemys rubriventris bangsi*) which the Service will print and distribute through the extension education network, once the turtle is listed.

- New York State Cooperative Extension at Cornell University is preparing educational materials on the indiscriminate shooting of bald eagles, peregrine falcons, and other raptors in hopes of reducing raptor shooting losses.

- The Florida Cooperative Extension Service is developing a publication on the State's endangered plants. The extension service will also distribute the volume, scheduled for completion in September 1979.

- The Colorado Extension Service plans to prepare, print, and distribute a publication on the endangered, threatened, and rare fishes of the Upper Colorado River Basin, to be directed toward water user groups, agricultural interests, and energy development interests.

- An information package on the endangered species of South Dakota is in preparation by the South Dakota Cooperative Extension Service.

Also under consideration is the development of publications on Idaho's endangered plants and on the whooping crane (*Grus americana*) in Idaho, on Washington's endangered plants, and on salt marsh values for California's endangered species, all to be prepared and distributed through the Cooperative Extension Service.

Passage of the Renewable Resources Extension Act of 1978 on June 30 has reaffirmed Congressional support for an effective extension education system. The legislation authorizes the appropriation of \$15 million annually for 10 years, and includes fish and wildlife as a full partner (with other renewable resources) within the Federal extension network. Although appropriations have not yet been made under the Act, we remain hopeful that this shot in the arm may also boost Endangered species conservation—through more and better education.

Puerto Rican Parrot On the Upswing

At the close of its eleventh year, the results of this season's Puerto Rican parrot research program have given biologists renewed hope that this critically Endangered species may yet recover. Tallies from the Service's Puerto Rico Field Station reveal increases in the wild population of Puerto Rican parrots from 19 in 1977 to as many as 28 birds in 1978, with the fledging of a record 9 chicks—evidence that the tireless, innovative efforts of Fish and Wildlife Service and U.S. Forest Service workers may finally be paying off.

Inhabiting the island's Luquillo Mountains within the Caribbean National Forest, the Puerto Rican parrot (*Amazona vittata*) population reached a low point of just 13 birds in 1975. (The species has been threatened by habitat and nest destruction (the latter by honey harvesters, who rob empty cavities often occupied by bees), taking as pets, parasitism, predation, and shooting.) Although its numbers have been building since that time, they have until this year consisted mainly of immature and non-breeding birds, with the number of breeders actually declining to only 3 pairs during 1976 and 1977. For James W. Wiley, wildlife biologist in charge of the Service's parrot research program in Puerto Rico, the year's most significant event was the increase in the wild to four breeding parrot pairs, all of which laid eggs (the new pair adopting a nest site it had been inspecting in 1977). Additional pairs were observed inspecting nesting areas during 1978, and may also settle down to breed during the next couple of years.

Initiated by Dr. Frank H. Wadsworth of the Forest Service's Institute of Tropical Forestry, research on the Puerto Rican parrot was at first funded by both the World Wildlife Fund and the Forest Service, with a Fish and Wildlife Service biologist assigned to the station (at first Cam Kepler, followed by Noel Snyder in 1972, and then Wiley). The Fish and Wildlife Service now oversees all research efforts on behalf of the parrot, while the Forest Service provides the Puerto Rico station aviary, building maintenance, logistical support, and a staff of experienced biologists.

Help for Mother Nature

Under the watchful eyes of Wiley and Forest Service biologists, three of the nesting pairs (including the new pair) were successful in fledging young: one nest fledged two, one fledged three, and one fledged four. (Eleven of the 14 eggs laid in the wild hatched.)

Without emergency treatment, one brood probably would not have fledged at all, as their feathers became thoroughly matted with a gooey muck that accumulated on the inner surface of their nest when it sprung a leak late in the season. After several crash landings upon fledging attempts, field staffers discovered the goo at the bottom of the nest hollow, and rushed the birds to the aviary for a toothbrush scrubbing and "blow dry" in the brooder. The three chicks were then slipped back into their home cavity (which had been cleaned and lined to prevent further accumulations), and two soon managed to fly from their nest in the company of parent birds. But the third again plummeted from the nest in its airborne attempts, with feathers too damaged to carry its weight. After a complete transplant of the chick's tail and flight feathers (grafting in feathers molted by captive

parrots), the bird maneuvered a 30-meter flight in its first try.

One of the four wild nests failed during the incubation stage. The female parrot laid three eggs—two that were broken in the nest, and a "runt" egg. All were taken into the aviary for artificial incubation, and dummy eggs were substituted in the wild nest. The first egg had been badly crushed, and the embryo soon died from moisture loss. The other broken egg was repaired and hatched, and the chick was fostered into another active nest as its own had been deserted by the adult pair. (It fledged successfully with its foster siblings.) While the pair did lay a second clutch, they again left their nest unattended, and the embryos perished during the overnight chill. (Wiley cites this as the second documented case of Puerto Rican parrots laying replacement clutches, suggesting that double clutching may prove useful as a management tool in the future.)

The Thrasher Problem

This year, all wild breeding parrots were also helped along in their nesting efforts with artificial and improved natural sites, which proved completely effective in preventing nest predation by pearly-eyed thrashers (*Margarops fuscatus*). In previous years, thrasher predation was regarded as the major cause of egg and chick losses.

The U.S. Forest Service (responsible for the area inhabited by Puerto Rican parrots) has boosted nest enhancement efforts by providing five polyvinyl chloride nest boxes this past year, constructed according to designs developed by project biologists. To discourage entry by the thrashers, existing nest hollows were also deepened and reinforced, increasing the number



Puerto Rican parrot chick with feathers matted from muck in its nesting hollow.

of suitable nesting sites for the wild parrots. Some were modified with baffles and angles, making the parrot eggs more difficult to spot by the predators.

Nest boxes especially designed for thrashers were also placed within 6-20 meters of active parrot nests to lure the robbers away from parrot cavities and decrease interactions between the two species. Using the provided box, the territorially resident thrasher effectively defends the parrot nests as well as its own against other thrasher pairs that might otherwise prey on the contents of the parrot cavity. These innovations were apparently successful, as none of the parrot nests was seriously threatened by the predators during the 1977 and 1978 breeding season.

The thrashers were also used this year as "guinea pigs" in an attempt to develop techniques for the control of warble fly (*Philornis pici*) parasitism on parrot chicks. (Thrashers were selected as they are generally heavily infested by warble fly larvae and also nest in cavities like the parrots.) Ex-

perimental use of two pesticides, Pyrethrin and Dermatron, in a number of thrasher nests was shown to be effective, with treated chicks having higher survival and fledgling rates. (None of the untreated, larvae-infested thrasher chicks survived, while Pyrethrin-treated nests were found 100 percent more successful and Dermatron-treated broods showed a 63 percent higher rate of survival.)

One of the three parrot nests with chicks was parasitized twice during the year by warble flies, but neither infection resulted in chick debilitation.

Success with Captives

Also this year, fertile eggs were produced for the first time by a captive Puerto Rican parrot pair. In an attempt to insure hatching and proper care of the eggs, all were removed from the nest (with dummy eggs substituted), and placed in the aviary incubator, where three appeared to be developing normally. Unfortunately, two of the embryos died just prior to hatching, and a third got to the "pip-

ping" stage but died just after the first effort to peck out of its shell. (The fourth egg was infertile.) The productive female sat on the dummy eggs for about 33 days before abandoning the nest.

A total of 15 Puerto Rican parrots are now housed at the Puerto Rico Field Station aviary for use in the captive breeding program. (In September 1977, the two parrots kept at the Service's Patuxent Wildlife Research Center in Maryland were transferred to Puerto Rico, and one additional nestling parrot from a wild nesting pair was taken into captivity this year when the adults failed to feed it.)

One of the most frustrating problems for researchers dealing with the captive flock has been sex determination, as the Puerto Rican parrot is monomorphic. Karyotype and nuclear density techniques have been tried in the past, but results proved inconclusive. In December 1977, research biologists Nancy Czekala and Arden Bercovitz from San Diego Zoo began analyzing steroids in the fecal samples of captive parrots with excellent results. (Findings for nearly all birds over one year old agreed with known sexes of the aviary parrots.) In 1978, the team continued its attempts to identify sexes of the younger birds, for which intermediate estrogen-testosterone values had been obtained earlier. Their results revealed a biased captive sex ratio of nine females to four males (with the sexes of two of the young captives remaining undetermined). Subsequent to their initial sexing, the captive birds were separated into three heterosexual pairs, with the positive reproductive results discussed earlier. (Mistaken matching in parrots can result in the development of strong homosexual bonds, making later pairings difficult.)

Field station staffers also received training during February in artificial insemination techniques from Dr. George Gee, research physiologist at Patuxent. It is hoped that the productivity of captives may be increased by distributing semen from the four males among the nine females (including the five "spinsters").

During the coming year, Wiley and his assistants will study the parrot's food habits, as well as limiting factors within the rain forest. Possible release sites for the introduction of a second Puerto Rican parrot population (in case of the spread of disease) will also be investigated.

Fish and Wildlife and Forest Service biologists are now at work on a comprehensive manuscript on Puerto Rican parrot biology (to include management recommendations), which will be drafted by Spring.



Photo by James W. Wiley, U.S. Fish & Wildlife Service

Its feathers replaced by molted feathers of captive birds, the chick successfully fledged.

Committee Exempts Grayrocks; Denies Exemption For Tellico Dam

Continued from page 1

terior officials suggested postponement of the Tellico dam as one alternative and liquidation of landholdings as another. (Both of these options would likely be subsumed under the more general alternative of river development.) As reasoned in the Staff Report to the Committee, it appears that river development—which would maintain the Critical Habitat of the snail darter—is TVA's most feasible and economic alternative to the Tellico project. (Also, partial removal of the earthen dam structure, which now prevents migration of the darters, will allow the yearling fish to move upstream to spawning areas.)

In their unanimous exemption of the Grayrocks Dam and Reservoir Project, Committee members specified the adoption of mitigation and enhancement measures consistent with the provisions of an out-of-court agreement (see December 1978 BULLETIN) to insure maintenance of the Critical Habitat of the whooping crane (*grus americana*). The December 1978 agreement—recommended by Grayrocks' sponsor, the Missouri Basin Electric Power Cooperative, and supported by the National Wildlife Federation, State of Nebraska, and National Audubon Society (as plaintiffs) as well as the Rural Electrification Administration (REA) and Army Corps of Engineers (defendants)—provides for the following:

- The maximum annual water use by the Grayrocks project will be limited to 23,250 acre-feet/year.
- The project agrees to certain releases of water during various periods of the year.
- The project will replace up to 11,250 acre-feet (subject to certain adjustments) withdrawn by the Corn Creek Irrigation District.
- The project will establish a trust fund of \$7.5 million for the maintenance and enhancement of the cranes' Critical Habitat.

The mitigation and enhancement measures (required upon the exemption of any project from compliance with Section 7 of the Act) will serve to partially compensate for the impacts of water depletion anticipated on completion of Grayrocks, thereby providing for some maintenance of the crane's essential stopover points along the Platte River.

The Committee expects to issue its decisions in writing prior to the February 7 exemption deadline.



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of December:

Region 1: Bald eagles (*Haliaeetus leucocephalus*) began returning to the Bear Valley roost near Klamath Falls in October with increasing numbers noted during the latter part of the reporting period. Counts are now being made of the eagles in the three roost areas.

Approximately 1,200 Aleutian Canada geese (*Branta canadensis leucopareia*) have been recorded in the Faith-Mapes Ranch area of the San Joaquin Valley. Thirteen of the blue neck-collared guidebirds from the Agattu Island release have been recorded (see Regional Briefs in October 1978 BULLETIN), but to date none of the propagated Aleutians from the Agattu release have been sighted on the California wintering grounds.

Realty appraisals were received on five tracts of land inhabited by the blunt-nosed leopard lizard (*Crotaphytus silus*) in California. (One owner of 80 acres had planned to level his tract for irrigation in January, and the region was to attempt purchase prior to that time.)

A meeting was attended in Honolulu by Hawaii State Fish and Game, National Marine Fisheries Service, and Fish and Wildlife Service agents to discuss overlapping State and Federal sea turtle regulations and related enforcement problems.

The Sacramento Area Office is compiling and annotating a series of topographic maps of California and Nevada showing current distributional information on Endangered and Threatened animal and plant species in the area.

Region 2: Regional staffers met with representatives from Arizona Game and Fish, U.S. Forest Service, Bureau of Land Management, and the Navajo Nation to finalize plans for completion of a survey of Arizona's nesting peregrine falcon (*Falco peregrinus anatum*) population.

Region 3: Coincident with the annual Midwest Fish and Wildlife Conference in Columbus, Ohio, State endangered species coordinators for the Great Lakes States met to discuss future planning. Participants from private industry, as well as representatives from Region 4 and 6 and other Federal agencies, attended the session.)

Region 5: On December 21, the Boston Regional Director issued a biological opinion to the Environmental Protection Agency on the proposed Pittston Oil Refinery and Marine Terminal. The consultation involved two Endangered species, the Arctic peregrine falcon (*Falco peregrinus tundrius*) and the bald eagle. Region 5 found that impacts of the project on the falcon were expected to be negligible, but that the operation of the refinery (and the likelihood of debilitating oil spills) would likely jeopardize the continued existence of the eagle. (Two alternative construction sites were suggested in the opinion: Portland, Maine, and Penobscot Bay, Maine.)

Pittston submitted on application for exemption from compliance with Section 7 of the Endangered Species Act to the Secretary of the Interior on January 26—the first received since exemption consideration was allowed under the 1978 amendments to the Act. (Details on the Pittston opinion will be provided in the February 1978 BULLETIN.)

STATE REPORT

WISCONSIN UPS ITS PROTECTION OF NATIVE ANIMALS AND PLANTS



*Department of
Natural Resources*

A pioneer in endangered species conservation, Wisconsin has recognized the importance of protecting its declining wildlife since 1971, when it undertook a review of its native nongame animals. The Wisconsin Legislature passed the State's Endangered Species Act in 1972, calling for the development of a list of endangered wildlife and mandating protection of State listed species as well as those on the Federal list.

A State endangered species program soon began to take shape to implement the new law, and an eight-member Endangered Species Committee was established to coordinate program efforts in their infancy.

In March 1978, former Wisconsin Governor Martin Schreiber asked that greater attention be given nongame and endangered species. Wisconsin's Natural Resources Board endorsed this proposal, instituting the Office of Nongame and Endangered Species expressly to coordinate and administer the program in the Department of Natural Resources. In May, the State Legislature acted to further strengthen and extend the State's authority for jeopardized and other nongame species by providing for the protection of a "threatened" category of animals as well as both endangered and threatened plants.

Program Mission/Philosophy

Wisconsin's endangered species program is now becoming more formalized under the direction of James B. Hale, a wildlife researcher who has served on the State's Endangered Species Committee since its formation. Assisted by a research biologist, com-

munications specialist, and administrative assistant, Hale explains that his real function is to develop and coordinate conservation programs for endangered and threatened species with the assistance of other bureaus under the Department's Division of Resource Management and DNR field staff.

Wisconsin's Endangered Species Committee (formerly active in administering the State program) now serves in a scientific advisory capacity to the Office of Endangered and Nongame Species. Chaired by Dr. Ruth L. Hine, the Committee provides expertise in different areas of specialization to insure the soundness of proposed research and listing activities and otherwise assists in the gathering of biological data on the State's animals and plants.

Wisconsin's Endangered Species Program was created in the hope of not only determining the status and distribution of endangered and nongame species, but also to direct the restoration and management of habitat to benefit endemic species, to preserve natural areas, and to reintroduce declining or extirpated native species to the State.

Becoming operative this past October, the separate Office of Endangered and Nongame Species was established with a view toward applying the "ecosystem approach" in the conservation of endangered species. Its goal is to maintain populations of all native animals and plants, not only for their scientific and aesthetic value, but also for their own intrinsic worth in nature's scheme. The program was founded on the principle that knowledge of the changes in the distribution and abun-

dance of native species will serve to identify those areas where the life support system has been damaged and, at the same time, to guide the attitudes and actions of public and private interests toward better managing the total ecosystem. This concept is especially paramount in the administration of Wisconsin's program—that the State is working for the benefit of the whole biotic system, not just individual species.

To meet program objectives, Hale's office operates on an annual State budget of \$91,500, more than half of which is derived from the general revenue, with the remaining \$45,000 coming from hunting, fishing, and trapping licenses. District field staff time (or its equivalent worth) is then applied as part of the State's one-third matching fund share, enabling Wisconsin to receive greater Federal Endangered Species grant-in-aid assistance to boost program efforts. (For Fiscal Year 1979, Wisconsin is slated to receive \$175,300 in Federal matching funds.)

Species Lists

In line with the program's newly mandated responsibility for threatened species, Hale's office has proposed candidates for a State threatened species list as well as revisions to its present list of endangered species. The Natural Resources Board recently approved the office's recommendations for public hearings on the proposed list. (The public hearing on the posed list. (A hearing on the posposal is scheduled for 9:00 a.m. on March 16 at the State DNR building in Madison.)

Continued on page 8

STATE REPORT Continued from page 7

Currently, Wisconsin protects the following 19 species of animals as endangered:

Pine marten (*Martes americana*)
Canada lynx (*Lynx canadensis*)
Timber wolf (*Canis lupus*)
Bald eagle (*Haliaeetus leucocephalus*)
Osprey (*Pandion haliaetus*)
Double-crested cormorant (*Phalacrocorax auritus*)
Peregrine falcon (*Falco peregrinus*)
Ornate box turtle (*Terrapene ornata*)
Wood turtle (*Clemmys insculpta*)
Queen snake (*Regina septemvittata*)
Massasauga rattlesnake (*Sistrurus catenatus*)
Shortjaw cisco (*Coregonus zenithicus*)
Longjaw cisco (*Coregonus alpenae*)
Shortnose cisco (*Coregonus reighardi*)
Kiyi (*Coregonus kiyi*)
Ozark minnow (*Dionda nubila*)
Pugnose shiner (*Notropis anogenus*)
Greater redhorse (*Moxostoma valenciennesi*)
Higgin's eye pearly mussel (*Lampsilis higginsii*)

Thirteen additional species of animals (among them the barn owl, *Tyto alba*, *Pratincola*, piping plover, *Charadrius melodus*, common tern, *Sterna hirundo*, Forster's tern, *Sterna forsteri*, northern and western ribbon snakes, *Thamnophis sauritus septentrionalis* and *T. proximus proximus*, respectively) are now proposed for the endangered category. All seven fishes now listed are being recommended for transfer from the endangered list to other categories. Two formerly endangered fishes have joined eight other species of fish to be recommended for the threatened category. Five birds, one snake, one turtle, and four amphibians are also included in the office's recommendation for threatened classification. For the first time, 41 plants are proposed for endangered listing, and 24 are proposed as threatened (including the federally-listed northern wild monkshood (*Aco-*

nitus noveboracense).

Ongoing and Past Mammal Work

Once extirpated from the State (in 1932) due to extensive lumbering and fur trapping, the fisher (*Martes pennanti*) is now considered Wisconsin's success story. In 1956 and 1960, a total of 86 fishers were restocked in the Nicolet National Forest, and another 60 were brought to the Chequamegon National Forest in 1966 and 1967. Today, the fisher has recovered to the point that it is being considered for placement on the State's "watch list" (advisory only), with encouraging reports from many areas across the north.

Similar reintroductions have been attempted with the endangered pine marten, but as yet with undetermined success. Pine martens apparently occurred in most of Wisconsin's wooded areas at one time, and were not uncommon in spruce and pine forests until the mid-1800's. Few martens were recorded after the trapping season was closed in 1921, with the last recorded specimen taken in Douglas County in 1925. High fur value, ease of trapping, and destruction of habitat were responsible for the decline. A total of 124 pine martens were reintroduced into the Nicolet National Forest between January 1975 and April 1976, and Wisconsin hopes to obtain 25 additional female martens this year from Ontario to increase the chances of restoring healthy populations to the State.

Although not endangered in Wisconsin, the river otter (*Lutra canadensis*) is the subject of a cooperative effort with the State of Colorado. In an attempt to restore the otter to Colorado, where it has been extirpated for 75 years, Wisconsin is to provide ten animals to Colorado each year for three years. (The first shipment was delivered in 1978.)

The Kirtland's Warbler: A Special Case

The future of the federally Endan-

gered Kirtland's warbler (*Dendroica kirtlandi*) is uncertain unless ways can be found to increase its dwindling population (estimated at around 200 singing males, with an unknown number of females).

In the summer of 1978, two male Kirtland's warblers were identified in the jack pine flats of central Wisconsin, representing the first ever observed in the U.S. outside of their traditional Michigan range during the nesting season. If the warblers return



to Wisconsin during 1979, the area will probably be managed to maintain the low-growth vegetation the birds prefer. Working in cooperation with Michigan endangered species specialists, Wisconsin personnel are exploring possibilities for cross-fostering Kirtland's warbler eggs or introducing female warblers into the jack pine area in hopes of initiating a Wisconsin

population.

Michigan has been actively involved in Kirtland's warbler management for years, in an attempt to increase the species' numbers in the State. In line with the Service's Kirtland's Warbler Recovery Plan, both Wisconsin and Michigan are cooperating in this year's effort to establish warbler nesting populations in suitable habitat outside of

Wisconsin specialists have introduced more than 100 pine martens to the Nicolet National Forest in an attempt to restore the species in the State.



Photo courtesy of Wisconsin Dept. of Natural Resources

the species' remaining range in Michigan. As a result, both States qualify for 75 percent Federal matching fund assistance for their coordinated survey and habitat management activities.

Shorebirds, Terns . . . and Ospreys

Relatively little is known about the abundance and distribution of shorebirds in Wisconsin, and the State's nesting tern populations are declining due to habitat loss.

Of the few shorebird species that nest in Wisconsin, the piping plover is of greatest concern because of increasing habitat deterioration and human disturbance, and the bird's sensitivity to environmental alterations. While two and possibly three pairs of piping plovers nested on the shore of Lake Superior in the summer of 1977, only one nest was occupied in 1978. This area is now being studied to determine what protection and/or management may benefit the plover.

Wisconsin's "inland shorebird," the upland sandpiper (*Bartramia longicauda*), has declined in past decades and is also threatened by habitat degradation. A survey of this bird, using recently developed census techniques, will soon be conducted.

The common and Forster's terns are also declining due to habitat loss. Although excellent data are available on common tern nesting sites along the Lake Superior shoreline and in the Green Bay area of Lake Michigan, additional information is needed on the remainder of the Lake Michigan shoreline (to be gained through this year's survey effort). A survey now underway is providing information on the occurrence of colonies and habitat requirements of the Forster's tern. (High water destroyed a large colony nesting in substandard habitat in Green Bay in the spring of 1978.) Preliminary work has begun on the construction of permanent floating platforms for use by nesting Forster's terns.

Information from a 1977 Wisconsin
Continued on page 10

STATE REPORT Continued from page 9



Photo courtesy of Wisconsin Dept. of Natural Resources

Although the osprey remains on Wisconsin's endangered list, the species has been increasingly productive with the help of artificial nesting platforms.

survey showed a 17 percent decline in black terns (*Chlidonias niger*) since 1971. Inventories of nesting marshes are now underway in an effort to determine the current status of and threats to this species.

Wisconsin specialists have identified Hog's and Barker's Islands as ideal experimental management sites to develop and test habitat restoration techniques for potential use by nesting shorebirds and terns.

The osprey has been listed as endangered in Wisconsin since 1972. Ospreys once nested throughout the State, but are now limited to the heavily forested lake region of northern Wisconsin, central Wisconsin along the Wisconsin River, and rarely along the Mississippi River. Although down to .80 young per active territory (or less) from 1966-1974, osprey produc-

tion has increased to 1.20 young per active territory since 1975. In 1978, 129 osprey were produced in Wisconsin (more than double the number produced in 1973), making endangered species personnel even more optimistic about the potential success of their planned management efforts.

Ospreys continue to be threatened by pesticide contamination (causing eggshell thinning and reproductive failure), nest predation, human disturbance, direct loss from shooting and the destruction of nest trees, and the lack of suitable nesting habitat in the State. In hopes of boosting osprey populations to a level of stability in Wisconsin, program biologists are gathering population information through aerial surveys and improving and protecting existing osprey nesting sites. The increased use of manmade

nesting platforms has contributed to the bird's reproductive success in the past several years. In 1976, for example, production on artificial platforms averaged 1.86 young per active nest, significantly higher than production averages on natural sites.

Fishes

Seven species of fish are now included on Wisconsin's endangered list, but available information on their status is considered inadequate.

To rectify this situation, State specialists in 1977 embarked on a study of the distribution and abundance of Wisconsin fishes. Their preliminary findings have led them to recommend complete revision of the Wisconsin fish list. Species now listed as endangered are proposed for transfer to

PROTECTION AREAS TO BE AUTHORIZED FOR MANATEE

either the threatened, extirpated, or "watch list," while the gravel chub (*Hvbopsis x-punctata*), striped shiner (*Notropis chrusocephalus*), slender madtom (*Noturus exilis*), starhead topminnow (*Fundulus notti*), crystal darter (*Ammocrypta asprella*), gilt darter (*Percina evides*), and bluntnose darter (*Etheostoma chlorosomum*) are now recommended as endangered, and another 10 fish species (including two now listed as endangered) are proposed for the threatened list.

Under a separate project activity, Wisconsin specialists have also been attempting to determine the distribution, abundance, age, and species composition of the chub stock in Lake Superior. Four of the seven fishes now listed by Wisconsin are coregonids which—although formerly common in the deep water of Lake Superior—were drastically decreased as the result of overfishing, competition from alewives, and decimation by lampreys. Based on preliminary findings, both the longjaw and shortnose ciscos are now believed extirpated (and so have been proposed for transfer to this category). This study also aims to determine the impact of existing fisheries on these species to facilitate appropriate management recommendations on behalf of declining coregonids.

Molluscs

Although an inventory of the clams in large Wisconsin waters has been initiated, supplementary information is needed to round out the survey effort and determine the true status and distribution of Wisconsin molluscs. In addition to compiling a potential list of endangered and threatened clams and delineating their essential habitats, specialists will evaluate transplantation as a possible management technique (thus far never attempted with clams).

The Higgin's eye pearly mussel is now on the State and Federal endangered species list, and perhaps five additional Mississippi River clams are in need of protection. A completed survey of inland shallow waters and streams indicates that ten molluscs

Continued on page 12

The Service has joined the State of Florida in proposing the establishment of protected areas especially for the Endangered manatee (F.R. 1/23/79).

Through these proposed regulations, the Service is seeking to provide the procedural means for establishing manatee protection areas, within which certain waterborne activities such as boating and swimming could be restricted to forestall disturbance of the marine mammals.

Protected under both the Endangered Species Act of 1973 and the Marine Mammal Protection Act of 1972, the West Indian manatee (*Trichechus manatus*) continues to decline in the State of Florida, where it is vulnerable to human activities and especially power boats—identified last year as the greatest cause of manatee mortality and injury.

The proposed regulations would authorize the Director to establish necessary protection areas within inland or coastal waters under U.S. jurisdiction, where boating and other human waterborne activities could be restricted (in "refuge" areas) or prohibited (within designated "sanctuaries").

The regulations would also prohibit persons from engaging in any waterborne activities prohibited by State laws or regulations promulgated for the protection of manatees. (Florida has recently proposed and held hearings on the establishment of 10 areas as manatee sanctuaries.)

Comments on the proposed regulations should be submitted to the Director (LE), U.S. Fish and Wildlife Service, P.O. Box 19183, Washington, D.C. 20036, no later than February 22, 1979.

SEA TURTLE MEAT SEIZED

Special agents of NOAA's National Marine Fisheries Service (NMFS) and the Fish and Wildlife Service have reported the seizure of 12,500 pounds of illegal sea turtle meat on December 22 from a cold-storage facility in east Los Angeles.

The meat is of Mexican origin, and it is believed that the importer may have been unaware of the sea turtles' protected status when the shipment was made. All sea turtles occurring in North American waters now receive protection under the Endangered Species Act of 1973 (with the recent addition of the green (*Chelonia mydas*), olive ridley (*Lepidochelys olivacea*), and loggerhead (*Caretta caretta*) to the Federal list, effective September 6, 1978.)

Prior to the seizure, several sales were apparently made from the Los Angeles warehouse, and some turtle meat may have reached local retail markets. (NMFS is now attempting to recover this meat.)

Prosecution in this case awaits completion of the investigation, and subsequent action by NOAA's Office of General Counsel.

Iowa Publication

A November 1978 report on *Endangered and Threatened Iowa Plants* is now available. Co-authored by Dean M. Roosa and Lawrence J. Eilers, this "Special Report No. 5" may be ordered from the State Preserves Advisory Board, State Conservation Commission, Wallace State Office Building, Des Moines, Iowa 50319.

Endangered Plant Symposium

The New England Botanical Club has organized a symposium on "Rare and Endangered Plant Species in New England," to be held May 4 and 5, 1979, at Harvard University. In addition to keynote addresses, sessions on the biology of endangered species, plant conservation concerns in New England, and conserving rare plants and their habitats are planned.

For further information, contact Dr. Garrett E. Crow, Department of Botany and Plant Pathology, University of New Hampshire, Durham, New Hampshire 03824.

STATE REPORT

Continued from page 11

appear to be rare in Wisconsin.

Plants

Some plants proposed for Wisconsin's endangered species list represent remnant populations persisting since glacial ice advances, such as the alpine milkvetch (*Astragalus alpinus*). Wisconsin has 32 terrestrial vegetation types, ranging from prairie to deciduous forest to coniferous forest. Land use practices have made many of these native vegetation types rare, however.

Plants associated with rare habitats are especially subject to harm. The prairie white-fringed orchid (*Habenaria leupophaea*), for example, is proposed for the State's threatened list because of the loss of its prairie habitat. This scarce orchid is also being considered for protection as a federally Threatened species.

Wisconsin's program includes protection of undisturbed native habitat.

Public Awareness

Wisconsin's Office of Endangered and Nongame Species is especially concerned with public support. Many media projects are now in the works

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	33	227	260	3	18	21
Birds	67	144	211	3		3
Reptiles	11	47	58	10		10
Amphibians	5	9	14	2		2
Fishes	29	10	39	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	20		20	2		2
Total	197	440	637	39	18	57

Number of species currently proposed: 158 animals
1,850 plants (approx.)

Number of Critical Habitats proposed: 73

Number of Critical Habitats listed: 33

Number of Recovery Teams appointed: 64

Number of Recovery Plans approved: 18

Number of Cooperative Agreements signed with States: 22

December 31, 1978

to inform Wisconsin citizens of the status of State wildlife and their responsibility to it. The office's information-education program is based on the philosophy that the first step in getting people to take care of something is to help them appreciate it. As part of a comprehensive communications effort, the office plans a series of three booklets called "Life Tracks" discussing Wisconsin's program man-

agement and natural history of protected species and a fourth colorful booklet emphasizing the habitat needs of endangered species.

Other awareness activities include a multi-media slideshow/narration for use at public lectures and workshops, teaching aids, and an exhibit on endangered species, as well as radio documentaries and magazine and newspaper articles.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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SCHREINER APPOINTED ALASKA AREA DIRECTOR

Early in March, Keith M. Schreiner—guardian of the Endangered Species Program since its inception 7 years ago—will be bound for Alaska. Serving as Associate Director (Federal Assistance) of the Service since 1974, Schreiner will soon be moving on to different, and in many ways, broader duties as the Service's Area Director for Alaska.

Announcing the coming appointment, Robert L. Herbst, Assistant Secretary of the Interior for Fish and Wildlife and Parks, noted the critical nature of the task ahead for Schreiner. "In Alaska we have unique opportunities, but we must meet unique challenges in the period following resolution of the Alaska conservation lands (D-2) issue. The Area Director . . . responsible for meeting these challenges must be experienced, innovative, and resourceful."

Lynn A. Greenwalt, Director of the Service, said of Schreiner: "There is probably no person in our organization more capable of dealing effectively with the great natural resources issues of Alaska. Schreiner's past experience with Federal Aid programs has given him keen appreciation for the close, cooperative relations between States and the Federal Government. Under his direction, the Nation's Endangered Species Program went through its birth pains and today there is an endangered species consciousness in the United States where none existed before."

As Alaska Area Director, Schreiner will be responsible not only for Endangered Species, but also for all fish and wildlife resources on some 34 million acres of lands now managed by the Service. (Of this land base, 11.8 million acres were just added in December by President Carter as the first

"National Wildlife Monuments" in the Nation. Another 40 million acres are slated for addition to the massive network of National Wildlife Refuges in Alaska pending the adoption of the

Administration's current recommendations.)

Schreiner, 53, was born in Ollie, Iowa. He and his wife, Mary, have

Continued on page 4



Photo by Marvin Finnley

Outgoing Associate Director, Keith M. Schreiner (left), with Director Greenwalt at farewell party in his honor.

BOBCAT, SEA OTTER, TRUMPETER SWAN TO RETAIN THEIR STATUS UNDER CONVENTION APPENDICES

Following the receipt of comments from the scientific and conservation communities, the U.S. Fish and Wildlife Service (acting as U.S. Management Authority) has finalized its recommendations concerning the status of U.S. species listed under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (F.R. 2/14/79). In so doing, the Service has decided to withdraw its October 1978 proposals to reclassify

the bobcat, Southern sea otter, and trumpeter swan. The October proposals would have removed or reduced the protection provided these species by the 47 nations now party to this international treaty.

Many U.S. species are protected under the provisions of the Convention, a treaty developed to protect animals and plants which are threatened by international commercial trade.

Continued on page 4



Endangered Species Program regional staffers have reported the following activities for the month of January.

Region 2. The Houston Toad Recovery Team held its first meeting on Jan-

uary 18-19. Team members discussed the results of a survey conducted this past breeding season: no Houston toads (*Bufo houstonensis*) were turned up in suspected or previously known Harris County habitat areas. (The team also visited the type locality of the

species and surrounding areas to observe recent habitat destruction.)

Region 3. The first meeting of the Northern Bald Eagle Population Recovery Team met on January 26-27. The team discussed preliminary plans, team assignments, and recovery planning guidelines.

Around January 20, two bald eagles were found sick near Dubuque, Iowa. They were checked and treated at the Raptor Rehabilitation Center of the University of Minnesota, but the exact cause of illness was not determined. Within days, other eagles, ducks, and fish were found dead and dying in the same vicinity along the Mississippi River. Upon discovering a toxic substance emanating from a sewer pipe, a Service "SWAT" team took water samples and attempted to "harrass" eagles to keep them from fishing in the contaminated river waters. EPA's assistance was solicited, but as yet the source of contamination has not been determined.

Region 4. With concurrence from the Service and the Snail Darter Recovery Team, the Tennessee Valley Authority (TVA) has initiated efforts to establish a third population of snail darters (*Percina tanasi*) within the species' probable historic range. The fish are being taken from the Hiwassee River and transplanted to sites in the Holston River below Cherokee Dam. One immediate objective is to move as many fish as possible before the onset of the spawning season, from January to mid-April, so that reproductive success can be evaluated for the current year.

The population in the Little Tennessee River is not being utilized as a source for transplant stock because of uncertainties about its current status. The 2,400 snail darters now estimated to be in the Hiwassee River are the result of TVA transplant work conducted during 1975 and 1976.

Following the Endangered Species Committee January 23 decision to deny an exemption for TVA's Tellico dam (see January 1979 BULLETIN), TVA scheduled a public meeting on February 22 to solicit public views on alternatives to the dam and reservoir.

A Marine Turtle Workshop was sponsored by our Service and the National Marine Fisheries Service on January 24. Among the topics of discussion were modifications of shrimping nets to reduce turtle mortalities, surveys of the Southeastern U.S. coast to identify essential habitat areas, and research on artificial incubation, imprinting, and captive rearing.

Region 6. The Black-footed Ferret Recovery Plan is now printed and available for review in the Denver Regional Office.

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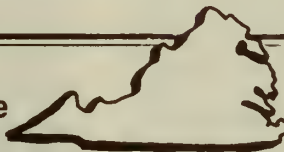
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EAGLE, PEREGRINE, RED-COCKADE, AND COUGAR AMONG PROTECTED SPECIES IN VIRGINIA

Commission of Game
and Inland Fisheries



Signs of the cougar in Virginia have been scarce since the end of the 19th Century, when this once common, wide-range predator seemed to vanish from the Eastern United States (except southern Florida, where a small, remnant population of Florida panthers, a subspecies of cougar, survives in the everglades). Generally driven west of the Mississippi by over-hunting and destruction of the dense habitat essential to its survival, the eastern cougar (*Felis concolor couguar*) was last identified in Virginia from a kill reported in Washington County in 1882.

The cougar has been fully protected in Virginia since 1971. Under a cooperative program with the Fish and Wildlife Service, State biologists are now trying to determine if the cat has managed to survive in the State. Since July 1977, when investigations formally began, nearly 40 cougar sightings have been recorded in Virginia. The most promising news came during 1978, when a specialist at the Smithsonian Institution in Washington identified the track of a cougar from a plaster cast made in western Virginia—positive evidence of the animal's existence in the State.

Under the direction of Joe Coggin, a biologist with the Virginia Commission of Game and Inland Fisheries, State specialists are intensifying their investigations in hopes of learning the cougar's true status in Virginia. With more information on the cougar's numbers and distribution in the State, recommendations can be made to promote its recovery.

The eastern cougar is one of 23 species of wildlife protected under Virginia's 1972 endangered species law. The State was one of the first to sign a cooperative agreement with the Service for endangered species conservation in 1975. Nearly all of Vir-



The existence of the eastern cougar in Virginia is the subject of investigations by State specialists. (This photo was taken in Colorado.)

ginia's research and survey activities on behalf of listed species are conducted with the assistance of Federal Endangered Species Grant-in-Aid funds. Inclusive of the Federal matching share, Virginia's endangered species program is budgeted at around \$50,000 for fiscal year 1979, with the State one-third contribution coming from the sale of hunting and fishing licenses. (While the State generally receives two dollars from the Service for every one dollar it contributes for research, survey, enforcement, or other pertinent activities, Virginia and Maryland now receive the maximum 75 percent in Federal matching funds for their joint conservation efforts on behalf of the bald eagle and the Delmarva fox squirrel.)

Virginia plans to research all protected species thoroughly before attempting management. Status surveys and other studies for most of the State-listed species are now accomplished

primarily through contractual arrangements administered under the State's Commission of Game and Inland Fisheries. For other than law enforcement functions, all endangered species projects are handled either by the Commission's Game Division (birds and mammals) or Fish Division (clams, fish, and snails) or—for sea turtles and other marine species—the Virginia Institute of Marine Science (under the State's Department of Commerce).

Other Mammal Work

During 1976 and 1977, potential habitat sites for the possible future release of Delmarva fox squirrels (*Sciurus niger cinereus*) were surveyed in Accomac and Northampton Counties by Dr. Ed Fisher of Averett College under contract to the Commission. Three possible release sites have been identified.

Continued on page 6

Photo by Don Domenick, Colorado Division of Wildlife

Convention Appendices Continued from page 1

Both an import and export permit are required for the international shipment of species listed under the Convention's Appendix I (and may be issued only upon a finding by a country's scientific authority that no detriment to the survival of the species will result from such trade). For Appendix II species, only an export permit is required with a similar finding by the scientific authority.

Acknowledging the controversy generated by several of the proposed changes (see the November 1978 BULLETIN), the Service based its revised recommendation on the bobcat (*Lynx rufus*) on a re-examination of available data on the species as well as comments received from the Endangered Species Scientific Authority (ESSA), the Council on Environmental Quality, Defenders of Wildlife, a number of States, and other organizations and individuals (following publication of the preliminary proposals in the November 27, 1978, *Federal Register*).

Noting that it is not now possible to determine whether the bobcat would become threatened with extinction if international trade restrictions were removed, the Service concluded that available data do *not* meet the criteria for removing the species from Appendix II. Although there is some question as to the bobcat's qualifications for inclusion if it were not already listed, criteria adopted by parties to the Convention require "positive scientific evidence that the species can withstand the exploitation resulting from the removal of protection afforded by the present listing." Such evidence should include population surveys, an indication of population trends "showing recovery sufficient to justify deletion or transfer," and an analysis of potential commercial trade in the species. (The Service and ESSA have proposed the adoption of special criteria for removal

consistent with those applied in adding a species to the Convention lists to be considered by the Convention parties at their March 19-30, 1979, meeting in Costa Rica. The Service says it will reconsider the appropriateness of including the bobcat on the Convention appendices if the new removal criteria are adopted.)

Concerning the Southern sea otter (*Enhydra lutris nereis*), the Service has

revised its proposal primarily for the reasons summarized in the following ESSA comments:

"The Southern sea otter has recovered from virtual extinction to a population estimated at somewhat less than 2,000 individuals. Although this recovery is encouraging, the population is still extremely small, is in competition with abalone fishery in California, and is vulnerable to oil pollution. In addition, the animal's pelt is very valuable, having led to its original decimation. Perhaps the strongest argument in

Continued on page 6



U.S. Fish and Wildlife Service Photo

The Service has withdrawn its October 1978 proposals to reclassify the bobcat

Schreiner Continued from page 1

three sons. He received an M.S. in wildlife management from Iowa State University in 1950, and joined the Service in 1956 after working with both the Iowa and North Dakota game and fish departments. During his 23 years with the Service, Schreiner served as a wildlife research biologist and held several positions in the Service's Federal Aid and River Basin Studies programs, prior to his appointment as

Chief of the Office of Endangered Species and International Activities.

Indeed, Keith Schreiner is best known for his devotion to keeping the Federal Endangered Species Program alive—an often thankless responsibility. Although it is not possible to measure the mark left by Schreiner on the cause of endangered species conservation, we know he will be missed by staffers and associates—and perhaps

thanked centuries from now for caring enough to persist.

(Harold J. O'Connor has been designated to serve as Acting Associate Director—Federal Assistance (and Endangered Species Program Manager) until Schreiner's replacement is selected. In the meantime, C. Phillip Agee (with the Service's Division of Federal Aid) will assist O'Connor as Acting Deputy Associate Director.)

We are now pleased to present another perspective on Mr. Schreiner's years in Washington—his own.

LOOKING BACK OVER MY SHOULDER

Keith M. Schreiner

On February 5, 1979, Director Greenwalt, my boss, personal friend, constructive critic, and sometimes father confessor, announced that I would soon be taking a long trip northwest so that I could jump out of the frying pan into the fire—he stated that I would soon become the new Area Director in Alaska. Before I again undertake the improbable, and/or the impossible, it's time for a quick look "over my shoulder" at my past 7 years with the Endangered Species Program.

Back in the Spring of 1972, when I "reluctantly agreed" (that's a euphemistic phrase that means "I was dragged kicking and screaming") to take the job called Chief, Office of Endangered Species and International Activities, I was admonished by a high Departmental official to do three things: (1) get a hard hitting Endangered Species Act with teeth in it, (2) implement that law as quickly and effectively as possible, and (3) make the Endangered Species Program highly visible to the public. I guess we probably exceeded his fondest dreams. He may even think it was a slight overkill in some respects.

Then came endless days and weeks that stretched into months of drafting and redrafting an endangered species bill, testifying before congressional committees, making speeches to advocates and antagonists alike, and generally trying to convince the Nation that it needed to develop an endangered species conscience quickly. That initial effort was doomed to fail—we didn't make it on the first attempt.

But dedicated bureaucrats (aided and abetted by a growing public concern for the environment) aren't thwarted that easily. We went back to the bill-drafting board and shored up the most vulnerable parts of the bill and then just for the heck of it put a few extra teeth in our endangered baby's jaw. It sold like cold margaritas to thirsty gringos. The congressmen on the Hill were highly receptive. Most private conservation groups were ecstatic. State conservation agencies were apprehensive, but were not openly hostile. And the general public, that gave a hoot one way or the other, voted a big resounding yes.

On December 3, 1973, we had an Endangered Species Act that was tough, hard hitting, and gut wrenching.

On December 4, 1973, we had hell to pay. Private bird fanciers that were shipping Endangered birds were in violation of the law. Zoos that were importing a new tiger or exporting an old gorilla were breaking the law. Animal dealers that had been wheeling and dealing all over the world had a very large crimp put in their style. And, Heaven forbid, even the circuses that were carrying Endangered animals in their menageries were breaking the law every time they crossed a State line.

On December 5, 1973, about 42,000 (plus or minus a few) constituents who felt their ox was being gored or thought their pantry was being pilfered wrote their congresspersons.

On December 6, 1973, I started a long and undistinguished career of standing on the carpet of irate congresspersons and getting beat about the head and shoulders. Various other parts of my anatomy did not go unscathed. This is a very unnerving occupation that tends to thicken your hide, increase your blood pressure, and make you determined to give rather than get ulcers. I can sit on broken beer bottles without discomfort—my blood pressure is 180 over 120 and I don't have ulcers—but some other folks do.

Following this initial shock, we worked several months on trying to control pandemonium, write the inevitable regulations that go with a new law, staff an office, obtain some dollars, and generally get on with the business of saving endangered species.

It was about this time that some members of the news media caught on to the fact that Endangered Species issues are generally controversial and hence make good copy. Too, there were bureaucrats involved and everyone knows that newspaper readers just love to read about roasted Federal bureaucrats. So, the phone started ringing and the press corps trooped in, and the free-lance writers had a field day—and they still do. One day a pretty but pernicious little newspaper writer bounced in and asked, "How do you cope with this continuing barrage of bad press?" My answer—"It hurts worse the first time than it does the second, third, fourth,

fifth, etc., and I console myself by thinking about all of the things that people and animals will do with and on today's newspaper tomorrow." I ended this interview as always by asking her to spell my name correctly and get my title right.

I suppose most Federal regulatory agencies live with controversy. But it seems that emotions run particularly high when Endangered animals are concerned. The warmer the blood, the furrer the hide, the browner the eye, and the cuddlier the animal, the higher the emotions run—sometimes almost to a fever pitch. Why don't more people care about a highly Endangered rattlesnake or a creepy little bug? They are God's creatures too. I'll never understand.

In the years that followed, a dedicated and hard working endangered species staff did their stuff in a big way and I was promoted to Associate Director, largely because of the staff's efforts (and the fact that no one else was damn fool enough to take the job). Together we listed species, established recovery teams, wrote and implemented recovery plans, prepared law enforcement strategies, enforced import and export regulations, designated Critical Habitats, acquired key Endangered species habitats, increased the activities of an ongoing research program, enhanced our Endangered species activities on National Wildlife Refuges, started up a very promising extension education effort, wrote budget justifications, prepared for endless congressional overview hearings, developed a permit processing organization, implemented an international convention of monumental magnitude, consulted with and advised Federal agencies on the consequences of their activities that might affect Endangered species, answered "jillions" of letters and phone calls and started up this BULLETIN—just to name a few activities.

It was hard work, fun, and very, very rewarding. It was exasperating, frustrating, and heart rendering. It was all of those and much more than memory or conscience permit me to recall. But above all, it was good and I'm glad I played a role. I can only hope that you are glad too.

To those of you who will carry on the battle—hold your chins high, gird up your loins, and charge. But don't ever look back over your shoulder—it makes you a little sad.

State Report

Continued from page 3

One hundred and fifty nest boxes designed for Delmarva fox squirrels were placed on Chincoteague National Wildlife Refuge in Virginia by Maryland members of the Service-appointed Delmarva Fox Squirrel Recovery Team in August 1976. The boxes are examined regularly, and any squirrels found are marked and released. Indications are that the squirrels have adapted to the Chincoteague habitat and are multiplying, with population estimates of between 100 and 200 squirrels.

Also under contract with the Game Division, Dr. V. M. Tipton of Virginia Polytechnic Institute has been supervising the State's Indiana bat (*Myotis sodalis*) project. Tipton has already plotted all caves where bats could possibly be found in Virginia, and plans to enter the caves as time permits. Indiana bats can only be found in Virginia during winter months from around October 1 to May 1. Thus far, Tipton has located only one cave, in Wise County, which is occupied by the species. The cave has a population of 500-1,000 bats.

The big-eared bat (*Plecotus townsendii virginianus*) has also been located in a cave in Burkes Garden, and there is evidence that the gray bat (*Myotis grisescens*) may occur in a cave in Wise County. Efforts are continuing to locate all species and determine their status in Virginia.

Bird Studies

Virginia has been actively participating with the Chesapeake Bay Bald Eagle Recovery Team, with Dr. Mitchell Byrd (College of William and Mary) serving as State representative. Under contract to the Commission, and in cooperation with other team members, Dr. Byrd and his assistants have run aerial surveys of all bald eagle (*Haliaeetus leucocephalus*) nests in Virginia over the past two years, and have monitored those nests found active.

Dr. Byrd believes the results of surveys thus far show reason for optimism regarding the status of the eagle in Virginia. This winter an eagle was seen carrying nesting material near the James River where, perhaps due to high levels of kepone and other contaminants, eagles have not bred for some time. Byrd and his colleagues soon hope to observe the first active nesting along the James in several years. In cooperation with personnel

from the National Wildlife Federation's Raptor Information Center, Byrd recently conducted aerial counts of wintering bald eagles in Virginia. A total of 114 eagles were observed between January 13 and 27, 1979, including 10 adults and 6 juveniles in the vicinity of the James River.

During recent years, personnel from the Raptor Information Center, under contract to the Commission's Game Division, have banded young eagles from known nests. In 1977, there were 33 active bald eagle nests in the State, in which 18 young birds were produced. Another 18 fledglings were produced in 1978 from 37 active nests, for an average production of 0.49 young per active nest and 1.29 young per productive nest. (The Federation banded 13 of the 1977 fledglings and 15 young 1978 birds, marking the Fish and Wildlife Service bands with colored vinyl streamers to make them more readily identifiable. Five of the 1978 fledglings along the Potomac River were also marked with numbered, white patagial markers in an attempt to determine their migration patterns.)

In cooperation with the Service's Patuxent Wildlife Research Center in Laurel, Maryland, both chick and egg transplants have been made with products of captive eagles at the Center. Early this past spring, two captive-reared eaglets, three weeks of age, were successfully introduced to an active eagle nest in Westmoreland County, Virginia. The receiving pair of eagles were in the midst of rearing their own chick when Virginia specialists and cooperators on the Federation's banding team managed to move the resident chick to another active nest in King George County already occupied by a chick of about the same age. Both the "shifted" eaglet and the Patuxent-reared chicks were successfully adopted by the foster parents, and all birds have fledged.

In 1977, one of two egg transplant attempts was successful in Virginia, although similar attempts failed in 1978. Researchers decided to replace the eggs produced by eagles nesting near the Mason Neck National Wildlife Refuge in northern Virginia when analyses conducted at the Patuxent Center revealed extraordinarily high contaminant levels in the eggs previously produced by the pair. Following the collection of "contaminated" eggs laid in 1977, two eggs produced by captive eagles were placed in the Mason Neck nest. The eggs were readily accepted and incubated by the adults, and one hatched. But on June 23—about two

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CONVENTION APPENDICES

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support of the Management Authority proposal is that the sea otter is thoroughly protected by other laws: particularly, the Marine Mammal Protection Act, the Endangered Species Act, and California State law. However, the Convention is the only global international agreement affording protection to this species, and because potential trade in the species has global dimensions that protection should not be lessened on the basis of more parochial laws."

Because available biological and other evidence does not clearly indicate that this species would more appropriately be listed under Appendix II, the Service has opted to retain the higher degree of protection for the sea otter.

Initially omitted from the appendices by clerical error, the trumpeter swan (*Olor buccinator*) is now recommended by the Service for retention on Appendix II primarily on the basis of ESSA's opposition to its removal because "the population is still quite small, and trade in feathers was the primary cause of its original depletion." Again, the Service has determined that the data on the status of the two U.S. trumpeter swan populations do not warrant removal of the species from Convention protection under existing criteria.

Other U.S. proposals formalized in the February ruling include

- removal of the Mexican duck (*Anas diazi*) from Appendix I and removal of the marsh hawk (*Circus cyaneus*), Mearns' quail (*Cyrtonyx montezumae mearnsi*), kestrel (*Falco sparverius*), U.S. osprey population (*Pandion haliaetus*), and greater prairie chicken (*Tympanuchus cupido pinnatus*) from Appendix II.

- transfer of the Bolson tortoise (*Gopherus flavomarginatus*), Guadalupe fur seal (*Arctocephalus townsendi*), U.S. population of American crocodile (*Crocodylus acutus*), and golden eagle population (*Aquila chrysaetos*) east of the Mississippi River from Appendix II to Appendix I.

- transfer of the Atlantic sturgeon (*Acipenser oxyrhynchus*), Peale's peregrine falcon (*Falco peregrinus pealei*), and Alaska population of bald eagle (*Haliaeetus leucocephalus*) to Appendix II.

- transfer of the American alligator (*Alligator mississippiensis*) to Appendix II. If adopted at Costa Rica, this new classification would allow regulated international commerce in alligators now reclassified (in three Louisi-



The trumpeter swan has been recommended for retention on Appendix II of CITES

ana parishes) as Threatened, *similarity of appearance** under the Endangered Species Act of 1973. (Alligator populations in an additional nine Louisiana parishes have also been proposed for such reclassification under the 1973 Act.)

* Under the Endangered Species Act of 1973 a species may be treated under similarity of appearance (S/A) provisions when it so closely resembles an Endangered or Threatened species that enforcement efforts are impaired, thereby posing an additional threat to the listed species.

In addition, the Service has decided to recommend retention of the goshawk (*Accipiter gentilis*) as it is now listed on Appendix II (rather than primarily for the purpose of controlling trade in other populations of the species). Because the goshawk is considered the rarest raptor in the conterminous 48 States (after the peregrine falcon, *Falco peregrinus anatum*), ESSA feared that local over-exploitation could result if the species' trade

were no longer regulated, especially in areas that are easily accessible. Because of this possibility, and the fact that U.S. populations of goshawks have not been well censused, the Service has decided to maintain the entire U.S. population of the species on Appendix II without annotation.

A similar revision in the U.S. proposal was made for the bighorn sheep (*Ovis canadensis*), in that data on the Canadian population of this species are not adequate to warrant its "removal" from Appendix II. Therefore, only the U.S. population listing will be annotated to indicate that its inclusion is to effectively control trade in other listed species. (Other recommendations for Appendix II listings with similar "annotations" are provided in the accompanying table.)

Revisions proposed by the U.S. and other countries will become effective only upon approval (by a two-thirds majority vote) of the nations party to the treaty at their Costa Rica meeting. The Service will announce the decisions on U.S. proposals and other significant Convention issues in the *Federal Register* following the March meeting. (A post-Costa Rica "debriefing" is also tentatively scheduled for April 4 at 1:00-3:30 in Room 7000B, Main Interior. Contact Joan Caton (703/235-2418) for more information.)

Species	Current listing	Proposed Recommendation	Final Recommendation ¹
Mexican duck	App. I	Delete from App. I	Delete from App. I.
Marsh hawk	App. II	Delete from App. II	Delete from App. II.
Trumpeter swan	App. II ²	Delete from App. II	Retain in App. II.
Mearns' quail	App. II	Delete from App. II	Delete from App. II.
Sparrow hawk	App. II	Delete from App. II	Delete from App. II.
Bobcat	App. II	Delete from App. II	Retain in App. II.
Osprey	App. II	Delete U.S. pop. from App. II	Delete U.S. pop. from App. II.
Greater prairie chicken	App. II	Delete from App. II	Delete from App. II.
Atlantic sturgeon	App. I	Transfer to App. II	Transfer to App. II.
American alligator	App. I	Transfer to App. II	Transfer to App. II. ³
Southern sea otter	App. I	Transfer to App. II	Retain in App. I.
Peale's peregrine	App. I	Transfer to App. II	Transfer to App. II. ³
Bald eagle	App. I	Transfer Alaska pop. to App. II	Transfer Alaska pop. to App. II.
Northern elephant seal	App. I	Transfer to App. II	Transfer to App. II.
Golden eagle	App. II	Transfer eastern U.S. pop. to App. I	Transfer eastern U.S. pop. to App. I.
Guadalupe fur seal	App. II	Transfer to App. I	Transfer to App. I.
American crocodile	App. II	Transfer U.S. pop. to App. I	Transfer U.S. pop. to App. I.
Bolson tortoise	App. II	Transfer to App. I	Transfer to App. I.
Goshawk	App. II	App. II for control of other species	Retain as is on App. II.
Golden eagle	App. II	List western U.S. pop. in App. II for control of other species.	List western U.S. pop. in App. II for control of other species.
Gray wolf	App. II	List Alaska pop. in App. II for control of other species.	List Alaska pop. in App. II for control of other species.
Puma	App. II	List U.S. and Canada pop. in App. II for control of other species.	List U.S. and Canada pop. in App. II for control of other species.
Bighorn sheep	App. II	List U.S. and Canada pop. in App. II for control of other species.	List U.S. pop. in App. II for control of other species.
Grizzly and brown bears	App. II	List Alaska and Canada pop. in App. II for control of other species.	List Alaska and Canada pop. in App. II for control of other species.

¹ Final decisions on amendments to Appendices are made by agreement of the Party nations.

² The trumpeter swan was omitted from App. II in the authentic text of the Convention, apparently by clerical error.

³ At request of ESSA, the Service will propose to the Parties that these species be included in App. II both because of the potential threat of extinction and because of the need to control trade in other listed species.

State Report

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weeks before the chick was ready for fledging—the nesting tree was downed by high winds. The eagle survived the fall, and roosted in a fallen tree nearby where the pair continued to feed it until it fledged around the 4th of July.

During the 1978 nesting season, the egg produced by the Mason Neck eagles was again removed, with a pair of captive-produced eggs substituted in its place. (Unfortunately, the adult female did not return to incubate the eggs.) The retrieved egg hatched at the Patuxent Center, and a surprisingly healthy chick emerged, leading biologists to discover the presence of a new, “clean” breeding female at the Mason Neck nest. Plans now call for the termination of egg transplants on Mason Neck with better prospects for the natural production of healthy chicks from this nest.

In addition to these bald eagle activities, a graduate student at the College of William and Mary is currently completing habitat analyses of all eagle nest sites in the State. Ten sites were completed in 1977-1978, and the two additional active sites located in the 1978 survey will be completed in 1978-1979. Data derived from these analyses will be utilized in developing management plans for each active bald eagle nest site in the State. Information obtained on the sites will also be helpful in the development of cooperative agreements with landowners on whose property nests are located.

This spring, Dr. Byrd also hopes to initiate radiotelemetry tracking of fledglings and to monitor at least one active nest with remote control video cameras.

Dr. Byrd and his assistants have recently completed a literature review of historical records of American peregrine falcons (*Falco peregrinus anatum*) in Virginia. Raptor counts on Virginia's eastern shore included more than three dozen of the Endangered peregrines (of which four were adults) from Sept. 23 through Oct. 29, 1978. About 10 peregrines wintered in Tidewater, Virginia, during the 1977-1978 season, and at least one bird used a bank building in Norfolk as a winter roost.

Last year, five peregrine chicks were placed on a State hacking station established on Cobb Island on the eastern shore (on an old Coast Guard look-out tower). Unfortunately, two of the chicks were blown from the tower



Immature bald eagle, product of egg transplant on the Mason Neck refuge.

during a summer storm. The remaining three (1 female and 2 males) did fledge successfully, and were observed away from the hacking station for extended periods. One of the Cobb Island birds was observed at a raptor banding station on Fisherman's Island in October 1978. (Virginia personnel are now working to construct a better hacking site to prevent further losses.)

Also of interest, a peregrine hacked at Mt. Tom, Massachusetts, in 1978 (also in cooperation with Cornell's Peregrine Fund program) was observed wintering near Portsmouth in the fall. Counts of migrating peregrines will continue, and hacking of young falcons will be accomplished again during 1979 if young birds are available.

Counts of migrating peregrines will continue, and hacking of young falcons will be accomplished again during 1979 if young birds are available.

Extensive surveys in Sussex, Surry, Isle of Wight, King George, Southampton, and Brunswick Counties as well as Virginia Beach and Suffolk Cities were conducted by Dr. Byrd and graduate students to determine the status of the red-cockaded woodpecker (*Picoides borealis*) in these areas. More than 40 sites with one or more cavity trees were located; however, many appeared inactive. Nesting

activity was observed at six clan sites in 1977, but only at two sites in 1978. Dr. Byrd has expressed serious concern over the chances for recovery of the red-cockaded woodpecker in Virginia, as habitat analyses reveal that only 2 to 5 percent of Virginia counties currently have timber of an age that would support colonies of the bird.

Plans are now under way, in cooperation with the Union Camp Corporation, to establish a protected research site of about 200 acres in Sussex County for the woodpecker. Byrd and his colleagues will then have ample time to study the foraging habits, nesting activities, and habitat requirements of the bird.

A literature review and recording of observations of the brown pelican (*Pelecanus occidentalis*), a migrant species in Virginia, were continued by Dr. Byrd and his associates. Among other observations, one group of 30 brown pelicans was seen in May 1977 on Fisherman's Island National Wildlife Refuge. Since that time, only one pelican has been reported (in August 1977) offshore of the Back Bay National Wildlife Refuge.

Marine Turtles and Fish

Virginia also protects four federally-

Photo by Steve Wunderley, U.S. Fish and Wildlife Service

listed species of fish, as well as four sea turtles (the Atlantic ridley, *Lepidochelys kempi*, hawksbill, *Eretmochelys imbricata*, leatherback, *Dermochelys coriacea*, and loggerhead, *Caretta caretta*).

Although the slender chub (*Hybopsis cahnii*) has not recently been taken in the State, portions of the Clinch and Powell Rivers in Virginia's Scott, Russell, and Lee Counties (where the fish is likely to occur) have been federally designated as "Critical Habitat" for the species. Virginia's two other Endangered freshwater fishes, the yellowfin madtom (*Noturus flavipinnis*) and spotfin chub (*Hybopsis monacha*), have been respectively known from Copper Creek and the north fork of the Holston River, but neither species has been taken in Virginia since its listing by the Service.

Two additional freshwater fishes, the Roanoke logperch (*Percina rex*) and orange fin madtom (*Noturus gilberti*) are now being considered for Federal listing on the basis of data compiled by Dr. Robert Jenkins of Virginia Commonwealth University (under a Fish and Wildlife Service contract funded by the Army Corps of Engineers).

The shortnose sturgeon (*Acipenser brevirostrum*) is a coastal anadromous species generally known from the mouths of large rivers and estuarine areas, and ascends coastal plain rivers to spawn in fresh water. Known to grow as long as 3½ feet and weigh up to 20 pounds, the shortnose occurs from the St. John's River in Florida to the St. John River north of the U.S./Canada border. With assistance from NOAA's National Sea Grant Program, the Virginia Marine Advisory Service at the Virginia Institute of Marine Science (VIMS) is now involved in educational and data gathering efforts on behalf of the sturgeon, and has placed posters in fish landing houses to aid in identification of the fish (often mistaken for the more common Atlantic sturgeon, *Acipenser oxyrinchus*). With matching fund assistance through the Anadromous Fish Federal Aid Program (under NOAA's National Marine Fisheries Service), Dr. Joseph Loesch of VIMS is now evaluating the status of the shortnose sturgeon, whose existence in Virginia has been known only from one specimen taken years ago from the Potomac River.

A booklet on sea turtles is now in preparation by Dr. Jack Musick of VIMS to explain the biology of these marine creatures, help with their identification, and discuss the basis for their protected status. Entitled "The Marine Turtles of Virginia, with Notes on Identification and Natural History,"

the publication should be available this summer from the Virginia Sea Grant Advisory Service, VIMS, Gloucester Point, Virginia 23062.

Dr. Musick and his associates also investigate reports of sea turtle injuries and deaths, help with identification of turtles, and attempt to determine the causes of mortalities. There is generally a high incidence of loggerhead mortality during May and June, when loggerheads are common in Virginia's coastal waters. (This is the only sea turtle species that nests on Virginia's beaches.)

Molluscs

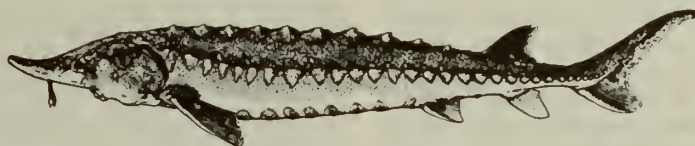
Nine species of endangered molluscs occur in the Tennessee River drainage in Virginia. Unfortunately, little is known of their current status and distribution. With funding assistance from the Service, TVA last year conducted a literature search on Virginia's molluscs and plotted their known distribution (under contract to the Commission). For fiscal year 1979,

VPI has been contracted to evaluate the status of listed Virginia mussels, their habitat types, and possible limiting factors.

1978 Symposium

In May 1978, Virginia Polytechnic Institute and State University, in cooperation with the Commission of Game and Inland Fisheries and VIMS, sponsored a symposium on the "Endangered and Threatened Plants and Animals of Virginia." The purpose of the session was to compile data on the status of jeopardized species in the State from which to formulate a list of species which are endangered, threatened, or "of special concern." In addition to biological information on these plants and animals, the proceedings of the symposium (to be available through VPI's Center for Environmental Studies) will contain research, management, and education suggestions for State and Federal planners, scientists, and citizens.

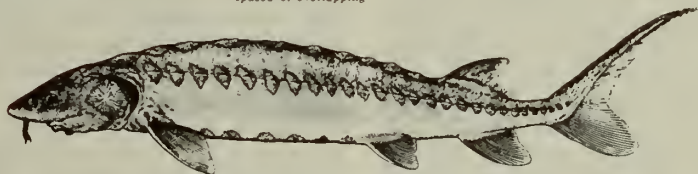
-WANTED- INFORMATION ON STURGEON



- ATLANTIC STURGEON -

Distinguishing Features:

Snout long, pointed, curved upward, narrow at base; Plates on top of back closely spaced or overlapping



- SHORT-NOSED STURGEON -

Distinguishing Features:

Snout short, blunt, wide at base; Plates on top of back with space between them.

PROTECTED SPECIES:

It is illegal by Virginia law to take sturgeon from Virginia waters. The short-nosed sturgeon, an endangered species, is also protected by federal law.

INFORMATION NEEDED:

The Virginia Institute of Marine Science requests anyone who catches a sturgeon to measure its length (from tip of snout to fork in tail), and weight. Live fish should be returned to the water immediately. Dead fish held for pick-up by VIMS personnel. Date caught, location and type of gear should also be given.

CALL OR WRITE:

VIRGINIA INSTITUTE OF MARINE SCIENCE
Ichthyology - Sturgeon
Gloucester Point, Virginia 23062
(804) 642-2111 ext. 269

SERVICE APPROVES GILA TROUT RECOVERY PLAN

A recovery plan for the Endangered Gila trout (*Salmo gilae*) was approved by the Service on January 12, 1979. The plan has as its prime objective improving the status of the trout to the point where its survival is secured. The plan calls for maintenance and enhancement of existing populations and habitat, re-establishing Gila trout within portions of its former range, dissemination of information on the species, assessment of Gila trout as a sport species, and transplanting individuals from seriously threatened populations to fish hatcheries.

Native populations of Gila trout are confined to five streams in the Gila National Forest, New Mexico, while two other streams in New Mexico and one in Arizona have transplant populations. It is the opinion of the Service-appointed recovery team for this species that each native population is unique, and efforts should be made to assure the survival of each.

The least vulnerable population occurs in Main Diamond Creek, home for nearly one-half of all Gila trout and source of the three transplanted populations. Less than 10,000 of the fish are thought to exist in these eight streams.

Readily identifiable by its iridescent gold sides which blend to a darker shade of copper on the opercles, the Gila trout has decreased in number because of hybridization with non-native salmonids, intense fishing activity, and changes in stream conditions.

The recovery team recommends selection of potential restoration streams and transplanting the Gila trout within its historical range. According to the plan, duplication of each population in at least one additional stream will more readily assure the species' survival. Mentioned in the plan are the possible transplants of the Spruce Creek population into the San Fran-

cisco River drainage, the Iron Creek population into the Middle Fork of the Gila River drainage, South Diamond Creek into the lower Gila drainage, and the McKenna Creek population into Little Creek.

Long-term survival and recovery will be aided by emphasizing this species' potential as a sport fish. The plan calls for the opening of some streams to public fishing as the Gila trout populations increase sufficiently to warrant downlisting from their current Endangered status.

The Gila Trout Recovery Team members are: Michael Hatch, Leader, New Mexico Department of Game and Fish; Paul Turner, New Mexico State University; Bruce Anderson, U.S. Forest Services; Bill Silvey, Arizona Game and Fish Department; and Dave Richter, U.S. Fish and Wildlife Service.

EXEMPTION APPLICATION PROCEDURES PROPOSED

In line with recently enacted amendments to the Endangered Species Act, the Departments of Commerce and the Interior have proposed procedures to be followed in applying for exemptions from compliance with the Act's protective Section 7 provisions (F.R. 2/7/79).

Section 7 of the Endangered Species Act requires all Federal agencies to insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence of Endangered or Threatened species, or result in the destruction or adverse modification of designated Critical Habitat. Under the 1978 amendments, Federal agencies may apply for an exemption from the requirements of Section 7, when either Interior's Fish and Wildlife Service or Commerce's National Oceanic and Atmospheric Administration determine that the completion of proposed Federal actions may violate the Section 7 stipulations.

When such an irresolvable conflict arises from a finding of jeopardy by either Department, or when a request for a Federal permit or license is denied for reasons of jeopardy to a species or its Critical Habitat, this proposal provides the mechanism for obtaining exemption consideration under

conditions and procedures specified by Congress in the 1978 amendments. (For a discussion of the amendments, including exemption provisions and establishment of the cabinet-level Endangered Species Committee, kindly consult the October 1978 BULLETIN.)

Contained in these proposed regulations are definitions of terms in the new amendments, procedures for making application for exemption, procedures for the appointment of Review Boards, procedures for notification of the Secretary of State and the Council on Environmental Quality, and provisions governing the relationship between the two Departments and the Endangered Species Committee (including appointment of State members to both the Review Board and the Committee). (Operating procedures for the Review Board and Committee are not contained in this proposal, but may be issued under the Committee's separate authority.)

Concerning applications for exemptions, the following procedures are proposed:

- Applications must be made to the Secretary of Commerce or the Interior, as appropriate.

- Applications must be made by a Federal agency, the Governor of the

State in which the action will occur, or a person whose application to a Federal agency for a license or permit has been denied (primarily because of Section 7 regulations).

- Applications for exemptions for proposed Federal actions must be received within 90 days after termination of the consultation process and issuance of the biological opinion (required under regulations for inter-agency cooperation under Section 7), or within 90 days following the effective date of these application regulations (when the biological opinion was issued before the effective date).

- Applications for exemptions for actions involving the issuance of permits or licenses must be received within 90 days after the denial, or within 90 days after the effective date of these regulations (if denied before that date).

- Applications must contain the following information:

- (1) Applicant's name, address, and phone number, and name and phone number of individual to be contacted regarding the application.

- (2) A detailed description of relevant permit(s) or license(s) denied (if appropriate) by a Federal agency, including descriptions of the proposed

INDIANA BAT/GRAY BAT RECOVERY TEAM

The Indiana Bat/Gray Bat Recovery Team has been re-appointed to facilitate efforts aimed at aiding the two similar species. The team will be under the direction of the Service's Denver Regional Office, because most of the caves involved in planned land acquisition activities are located in Missouri.

The team will be primarily responsible for updating the In-

diana Bat Recovery Plan and preparing a recovery plan for the gray bat.

Team members are: Dr. Richard LaVal, Leader, Columbia, Missouri; Dr. Merlin Tuttle, Milwaukee Public Museum; Dr. Tom Kunz, Boston University; Dr. Don Wilson, National Fish and Wildlife Laboratory; and John Brady, U.S. Army Corps of Engineers.

activity, the applicable laws, steps taken by the applicant to obtain the permit or license, and the grounds given for denial by the involved agency.

(3) Except as required under (2), a comprehensive description of the proposed Federal action and the effect it may have upon listed species or their Critical Habitat.

(4) A detailed description of actions taken during the consultation process (in accordance with Section 7 regulations), including a copy of any biological assessment prepared and the biological opinion rendered.

(5) If the biological opinion was issued before the effective date of these regulations, a statement by the issuing agency that the opinion is still valid and sufficient under the Endangered Species Act as amended.

(6) A detailed description of any alternatives to the proposed action under consideration which would avoid an irresolvable conflict, including an explanation of why there are no reasonable and prudent alternatives to the action that would avoid such a conflict and why the proposed action cannot be modified to conform to the requirements of Section 7.

(7) A description of any resources committed to the proposed action by the affected Federal agency (or permit/license applicant), demonstrating that the agency or applicant has made no commitment that would foreclose "the formulation or implementation of reasonable and prudent measures that would avoid an irresolvable conflict."

(8) An explanation of why the benefits of the proposed action clearly outweigh the benefits of alternatives consistent with conserving the species or its Critical Habitat, and why the action is in the public interest.

(9) An explanation of why the action is of regional or national significance.

(10) A description of possible mitigation and enhancement measures (in-

cluding live propagation, transplantation, habitat acquisition and improvement, etc.).

The joint agency proposal also provides for the initiation of Review Board appointments immediately upon receipt of an adequate exemption application. Briefly, the Secretary will:

(a) appoint one member within 15 days of receipt of an application.

(b) notify the Governors of affected States in writing, requesting their recommendations for appointees which are then forwarded to the President by the Secretary for his consideration. (The President must appoint a resident from an affected State within 30 days after initial receipt of the application by the Secretary. When no State is affected, the Secretary will submit to the President a list of individuals with expertise relevant to the application, requesting that the President appoint an individual to the Review Board within 30 days of receipt of the application by the Secretary.)

(c) request the Office of Personnel Management to appoint an administrative law judge (also within 30 days). Following appointment of all three members, the Secretary will submit a copy of the exemption application to the Board.

(Similar procedures are to be followed in the appointment of a State member to the 7-member Endangered Species Committee, in that Governors of affected States are again asked to recommend individuals to the President for his consideration. A member from each affected State is to be appointed to the Committee by the President within 30 days (these members then having one collective vote). When no State is affected, a list of recommended individuals is again submitted by the Secretary for consideration by the President in selecting an individual to vote with the Committee.)

Within 60 days after receipt of an application, the Secretary's views on

the application are submitted to the Review Board (including recommendations as to the final disposition of the application).

Comments on these proposed regulations, due no later than April 9, 1979, should be submitted to the Assistant Secretary of the Interior for Policy, Budget and Administration, Department of the Interior, 18th and C Streets, N.W., Washington, D.C. 20240.

Pending adoption of final regulations, these proposed procedures will serve as guidelines and should be followed in the submission of exemption applications.

NEW PUBLICATIONS

The Hunt Institute for Botanical Documentation is preparing a *Register* which will account for specialists and research projects in systematic botany. Included will be computerized lists of specialists in Threatened and Endangered plant species, lists of specialists by plant taxa, and lists of specialists by geographic areas. Only U.S. Threatened and Endangered species are covered.

The first printed edition of the *Register* will be published in spring 1980. Copies will be sent to all who respond to a questionnaire by August 31, 1979. The form can be obtained from a convenient botanical institution or by writing to Hunt Institute, Attention *Register*, Carnegie-Mellon University, Pittsburgh, Pa. 15213.

Recent Changes in Distribution and Status of Wild Red Wolves (*Canis rufus*) was prepared under contract to our Service's Albuquerque Regional Office by Howard McCarley, Austin College, Sherman, Texas, and Custis J. Carley, U.S. Fish and Wildlife Service. Subtitled *Endangered Species Report 4*, the paper deals with the Red Wolf Recovery Program's objective of determining the location and abundance of each surviving red wolf subspecies. Three earlier reports prepared under contract with Region 2 are *The Leopard Darter* (A Status Report), *Status of the Texas Blind Salamander*, and *Status of Troglodytes pattersoni Eigenmann, The Toothless Blindcat*. For more information write to U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103.

Rare Plants of the Ozark Plateau . . . a field Identification Guide, by Beverly
Continued on page 12

New Publications

Continued from page 11

J. Roedner and Keith E. Evans of the North Central Forest Experiment Station and David A. Hamilton, University of Missouri, is intended to stimulate the amateur botanist to look for these rare plants and provide notes on them and their habitats. For more information write to John H. Ohman, Director, North Central Experiment Station, U.S. Dept. of Agriculture, 1992 Folwell Avenue, St. Paul, Minnesota 55108.

New, Rare, and Infrequently Collected Plants in Oklahoma are discussed in a booklet published by the Herbarium, Southeastern Oklahoma State University. Copies are \$3.50 and may be ordered from Dr. R. John Taylor, Biology Department, Southeastern Oklahoma State University, Durant, Oklahoma 74701.

Endangered Plant Species of the World and Their Endangered Habitats:

A Compilation of the Literature, by Meryl A. Miasek and Charles R. Long, Library of the New York Botanical Garden, is an attempt to document worldwide efforts to list endangered plant species and their habitats. Over 600 literature citations are included in the book, which may be purchased for \$3.50 postpaid, from Library, The New

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	33	227	260	3	18	21
Birds	67	144	211	3		3
Reptiles	11	47	58	10		10
Amphibians	5	9	14	2		2
Fishes	29	10	39	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	20		20	2		2
Total	197	440	637	39	18	57

Number of species currently proposed: 158 animals
1,850 plants (approx.)

Number of Critical Habitats proposed: 73
Number of Critical Habitats listed: 33
Number of Recovery Teams appointed: 64
Number of Recovery Plans approved: 19
Number of Cooperative Agreements signed with States: 22

January 31, 1979

York Botanical Garden, Bronx, New York 10458.

The Colorado Division of Wildlife reports on the 25 species that are listed as threatened or endangered in the

State in **Wildlife in Danger**. For a free copy of this colorful booklet write to Colorado Division of Wildlife, Department of Natural Resources, 6060 Broadway, Denver, Colorado 80216.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

EXEMPTION PROCESS STAYED AS AGENCIES REINITIATE CONSULTATION ON MAINE REFINERY



Aerial view of Eastport, Maine, shows the proposed Pittston refinery site in the large open area (including the airport). Piers would be constructed on both sides of the peninsula in the lower left of the photo. (North would be at an angle toward the upper left corner.)

U.S. Fish and Wildlife Service photo

Following the receipt of new information on possible impacts of the project on the bald eagle, the Service and the Environmental Protection Agency have agreed to consult again on Pittston's marine terminal and oil refinery slated for construction at Eastport, Maine. In line with the March 5 decision, Secretary Andrus and the Pittston Company agreed that Review Board consideration of an exemption for the project should be suspended for as long as 90 days—or until consultation is completed in accord with Section 7 of the Endangered Species Act of 1973.

On January 26, attorneys for the Pittston Company had applied to Secretary Andrus for an exemption from the requirements of Section 7—a process recently provided through amendments to the 1973 Act—to allow construction of the \$700 million refinery and terminal. The application was the first received since enactment of the 1978 amendments, which permit exemption consideration for Federal activities (under stipulated conditions) by a newly established Endangered Species Committee after initial screening by a Review Board (see October 1978 BULLETIN).

All parties involved in the consultation agreement hope that information obtained will result in alternatives which would minimize expected impacts on the eagle without recourse to the cabinet-level Endangered Species Committee.

The consultation agreement was reached with encouragement from Secretary Andrus (designated as Chairman of the Endangered Species Committee), who said the special

Continued on page 3

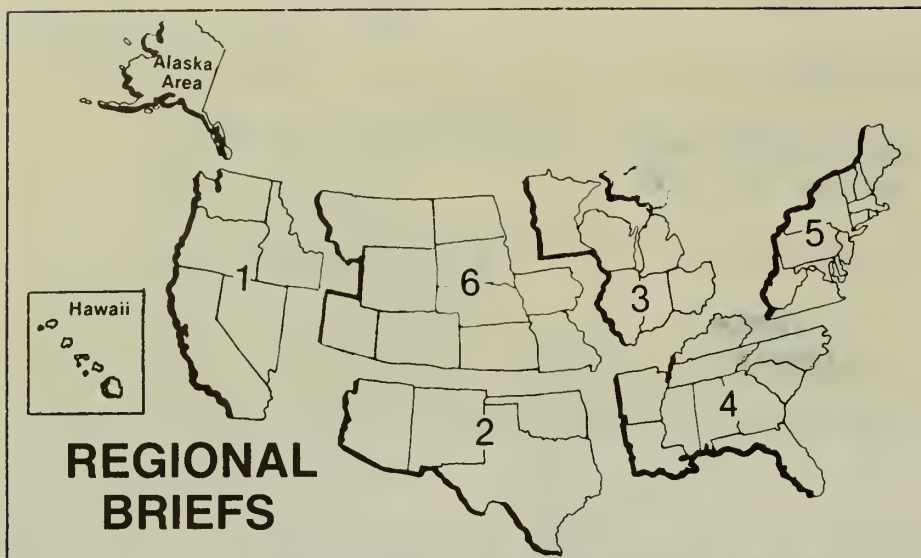
Critical Habitat Proposals Withdrawn; Other Proposals to be Supplemented

In compliance with requirements of 1978 amendments to the Endangered Species Act, the Service has withdrawn proposed rulemakings to designate Critical Habitat for various animals listed (or proposed for listing) as Endangered or Threatened species. In addition, the Service has announced that other proposals to add some 1,700 species to the list, although they have

not been withdrawn, may not be finalized until supplemented with additional information (F.R. 3/6/79).

To meet the requirements of the 1978 amendments (discussed in the October 1978 BULLETIN), all proposals to list species as Endangered or Threatened must also contain, "to the maximum extent prudent," specifica-

Continued on page 4



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of February.

Region 1. The California pitcher plant (*Darlingtonia californica*), a candidate Threatened species, is the sub-

ject of a recently completed study to determine its distribution and abundance, to document the nature and extent of threats to its survival (including trade), and to recommend management actions for its conservation.

U.S. Fish and Wildlife Service Washington, D.C. 20240

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U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont; Virginia and West Virginia. **Region 6:** Colorado, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Alaska Area:** Alaska.

The ENDANGERED SPECIES TECHNICAL BULLETIN is published monthly by the U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

Region 2, P.O. Box 1306, Albuquerque, NM 87103 (505-766-2321): W. O. Nelson, *Regional Director*; Robert F. Stephen, *Assistant Regional Director*; Jack B. Woody, *Endangered Species Specialist*.

Region 3, Federal Bldg., Fort Snelling, Twin Cities, MN 55111 (612-725-3500): Charles A. Hughlett, *Acting Regional Director*; Delbert H. Rasmussen, *Assistant Regional Director*; James M. Engel, *Endangered Species Specialist*.

Region 4, P.O. Box 95067, Atlanta, GA 30347 (404-881-4671): Kenneth E. Black, *Regional Director*; Harold W. Benson, *Assistant Regional Director*; Alex B. Montgomery, *Endangered Species Specialist*.

Region 5, Suite 700, One Gateway Center, Newton Corner, MA 02158 (617-965-5100): Howard Larsen, *Regional Director*; Gordon T. Nightingale, *Assistant Regional Director*; Paul Nickerson, *Endangered Species Specialist*.

Region 6, P.O. Box 25486, Denver Federal Center, Denver, CO 80225 (303-234-2209): Harvey Willoughby, *Regional Director*; Charles E. Lane, *Assistant Regional Director*; Don Rogers, *Endangered Species Specialist*.

Alaska Area, 1101 E Tudor Rd., Anchorage, AK 99057 (907-265-4864): Keith M. Schreiner, *Acting Area Director*; Dan Benfield, *Endangered Species Specialist*.

A technical report on the Threatened and Endangered plants of the Sheldon National Wildlife Refuge in northern Nevada is being printed, and should be available for distribution in early May.

A recovery plan for the Antioch Dunes evening primrose (*Oenothera deltoides* ssp. *howellii*) and contra costa wallflower (*Erysimum capitatum* var. *angustatum*) has been drafted in the Portland Regional Office. The plan also addresses recovery considerations for Lange's metalmark butterfly (*Apodemia mormo langei*), which occurs in the same area. The Service is now exploring the possibility of acquiring lands essential to the survival of the three species.

Late in February, the Service approved a contingency plan for captive propagation of the critically endangered California condor (*Gymnogyps californianus*). The multi-faceted propagation program—to be highlighted in the April 1979 BULLETIN—will be implemented as part of the overall condor recovery planning effort.

Region 2. All nine whooping cranes (*Grus americana*) of the experimental Grays Lake flock migrated north after wintering safely in the Rio Grande Valley in New Mexico (eight of the birds) and in Chihuahua, Mexico (one individual).

The Texas wild rice (*Zizania texana*), which historically occurred only in the spring-fed San Marcos River System (Hays County, Texas), is now restricted to a small portion of that original range. Efforts to reestablish the plant have been frustrated because nutria eat the transplants literally overnight. The Service's Division of Animal Damage Control recently trapped about 70 nutria within the problem area over a two-week period, and it is now hoped that this spring's transplants will have a better chance of surviving.

Seven active bald eagle (*Haliaeetus leucocephalus*) nests have been observed in the vicinity of the Salt and Verde Rivers near Phoenix—the only known active nests in this region of the country.

Region 3. On February 7-8, the Kirtland Warbler Recovery Team met to review the coming year's recovery effort and to gear up for this season's cowbird trapping program—an activity known to benefit *Dendroica kirtlandii*.

Jim Engel went to St. Louis on February 15-16 to meet with representatives of private industry and affected States concerning upcoming surveys of the Illinois mud turtle, *Kinosternon flavescens spooneri*, (and similar species) within its known range in Illinois, Iowa, and Missouri.

Region 5. Paul Nickerson testified before the legislative bodies of New

Hampshire and Vermont on proposed endangered species bills that would allow these States to enter into cooperative agreements with the Service, entitling them to Federal matching funds. The New Hampshire bill was subsequently defeated, although no action has yet been taken on the Ver-

mont legislation.

Dick Dyer met with representatives of seven States in Baltimore at a 2-day botanical workshop to discuss progress, exchange ideas, and coordinate activities for this season's plant surveys. The regional office has been especially pleased with participation

in the survey effort.

Boston regional employees, State personnel, and representatives of Cornell University met at Albany to plan forthcoming releases of peregrine falcons (*Falco peregrinus anatum*) in various States this spring. A tentative release schedule was established.

Exemption Process Stayed on Maine Refinery

Continued from page 1

Committee should serve "only as a court of last resort." Andrus believes there should first be "ample opportunity to develop data, in the hope that accommodation can be reached without doing violence either to an Endangered species or to a project."

Background

Two Endangered species, the Arctic peregrine falcon (*Falco peregrinus tundrius*) and bald eagle (*Haliaeetus leucocephalus*), are found in or near the Cobscook Bay area, where the terminal and refinery are now planned. In accordance with the requirements of Section 7, EPA initiated consultation with the Service's Boston Regional Office on September 12, 1978, on the impacts of the proposed project on listed species (prior to issuance of a wastewater discharge permit).

On December 21, 1978, the Boston office issued a biological opinion stating that the terminal and refinery would likely have "a negligible effect" on the peregrine falcon and its habitat (as the falcon rarely occurs in the area, generally migrating through an area some 200 miles west of Cobscook Bay). However, the Service determined that the Pittston project, as proposed, would likely jeopardize the continued existence of the bald eagle.

The northeastern bald eagle population has suffered a reduction in nesting success, particularly in the last several decades. Today, only four breeding pairs remain in the entire western half of coastal Maine, and of these, only one has successfully fledged young in recent years. However, the population has recently begun to recover in one area—northeastern coastal Maine—from Penobscot Bay to Cobscook Bay. In fact, the Cobscook Bay area has been identified as one of three areas in northeastern Maine under consideration as "Critical Habitat" for the eagle. Cobscook Bay alone has eight occupied nest sites, which accounted for 20 and 25 percent of the total production for the northeastern United States eagle population in 1977 and 1978, respec-

tively.

According to Service biologists, three principal factors have contributed to the decline of the eagle and continue to inhibit its recovery: (1) environmental contaminants (such as DDT and its breakdown products, PCB's, Dieldrin, and mercury, all of which have been found in dangerously high concentrations in unhatched Maine eagle eggs); (2) elimination of nesting habitat by human development; and (3) disturbance of nest sites by increased human activity. Upon completion of the Pittston project, significant adverse impacts on eagles and their habitat are expected to result from air pollution, development stimulated by refinery construction and operations, and oil spills.

Air pollution impacts are expected to result from mercury, lead, or sulphate emissions from the refinery. Lead and mercury are of particular concern because of their toxicity and their known accumulation in magnified levels as they pass to higher trophic levels in the food chain. It is also feared that sulphate emissions will aggravate an existing problem in the project area—acid rain and the acidification of lakes—which could contaminate populations of lake fish on which eagles largely depend for food.

Refinery construction and operation is also expected to stimulate development. Disturbance of eagles during and following construction of housing and industrial projects could result in nest desertions and decreased reproductive success. Increased development will also degrade Maine's coastal eagle habitat.

Oil spills would impact eagles through (1) embryonic mortality as a result of oil brought back to the nest by contaminated eagles; and (2) reduction of food items both in Cobscook Bay and in estuaries south of Eastport. The potential for mortality of eagle embryos is of special concern, as it has been shown that as little as five microliters of certain types of oil can result in a 70-98 percent mortality in mallard eggs. This small amount could easily be transported by adult eagles.

In the December opinion, the Service recommended either the Portland, Maine, monobuoy or the Blue Hill/Penobscot area as alternative locations for the Pittston project. Of the two, Portland was considered the most desirable location, as extensive planning has already been carried out by oil companies for development in this area. The Portland alternative would eliminate many of the project's impact's on the eagle, and would reduce the magnitude of remaining impacts, including contamination by oil spills and the stimulation of secondary development.

Next Steps

A special consultation team has been appointed to consider the impacts of the Pittston project in light of suggested modifications in project design or operation. As part of the process, the Service scheduled public hearings for March 28, 29, and 30 (in Maine and Boston) to seek additional biological data on the project's expected impacts. (Consultation will also involve the Army Corps of Engineers, which would have to approve a permit for the project under the Rivers and Harbors Act.)

A second biological opinion must be issued within 90 days of reinitiation, or by June 4. If further consultation fails to modify the earlier finding of jeopardy, then the Review Board will proceed to consider (within 60 days) the adequacy of Pittston's exemption application in line with legislated procedures. If warranted, the Board will then prepare a report for consideration by the Endangered Species Committee.

Appointed in February, members of the Review Board (the first of its kind), include: Lawrence E. Lynn, Professor of Public Policy at Harvard University, appointed by Secretary Andrus; John E. Menario, President of the Greater Portland Chamber of Commerce (formerly the Portland City Manager), appointed by President Carter; and Francis L. Young of the Department of Justice, who would serve as administrative law judge.

Proposals Affected by 1978 Amendments

Proposed title	Date of notice	Federal Register reference
Proposed Endangered status for 216 species appearing on Convention on International Trade ¹	Sept. 26, 1975	40 FR 44329-33
Proposed Endangered or Threatened status for 32 U.S. snails ²	April 28, 1976	41 FR 17742-6
Proposal to determine 2 birds, 1 lizard, 3 snails, and 1 insect, all indigenous to the California Channel Islands, to be Endangered species ³	June 1, 1976	41 FR 22073-5
Proposed Endangered status for some 1,700 U.S. vascular plant taxa ⁴	June 16, 1976	41 FR 24524-72
Proposed determination of Critical Habitat for Grizzly Bear	Nov. 5, 1976	41 FR 48757-9
Proposed Endangered or Threatened status for 41 U.S. species of Fauna ⁵	Jan. 12, 1977	42 FR 2507-15
Proposed determination of Critical Habitat for 6 butterflies and 2 plants ⁶	Feb. 8, 1977	42 FR 7972-75
Proposed Threatened status and Critical Habitat for the black toad	March 11, 1977	42 FR 13567-69
Proposed determination of Critical Habitat for the Houston Toad ⁷	May 26, 1977	42 FR 27009-11
Proposed determination of Critical Habitat for the woundfin	Nov. 2, 1977	42 FR 57329-30
Proposed Endangered status and Critical Habitat for 4 fishes	Nov. 29, 1977	42 FR 60765-68
Proposed Endangered listing and Critical Habitat determination for the Virginia and Ozark big-eared bats	Dec. 2, 1977	42 FR 61290-92
Proposed Endangered status and Critical Habitat for 5 fishes	Dec. 30, 1977	42 FR 65209-12
Proposed Endangered status for the bonytail chub and Threatened status for the razor back sucker	April 24, 1978	43 FR 17375-77
Proposed determination of Critical Habitat for the Maryland darter	May 12, 1978	43 FR 20518-19
Proposed Endangered status and Critical Habitat for 2 species of Turtles	May 19, 1978	43 FR 21702-5
Proposed determination of Critical Habitat for the hawksbill sea turtle	May 24, 1978	43 FR 22224-5
Proposed listing and Critical Habitat determination for 2 Hawaiian cave arthropods	June 16, 1978	43 FR 26084-7
Proposed determination of Critical Habitat for the Santa Cruz long-toed salamander	June 22, 1978	43 FR 26759-60
Proposed Endangered or Threatened status or Critical Habitat for 10 butterflies or moths	July 3, 1978	43 FR 28938-45
Proposed Endangered status and Critical Habitat for the Illinois mud turtle	July 6, 1978	43 FR 29152-4
Proposed listing and Critical Habitat determination for a fish and a salamander	July 14, 1978	43 FR 30316-9
Proposed Endangered or Threatened status and Critical Habitat for 10 beetles	Aug. 10, 1978	43 FR 35636-43
Proposed Endangered and Threatened status and Critical Habitat for 3 Texas fishes	Aug. 15, 1978	43 FR 36117-20
Proposed Critical Habitat for the whooping crane	Aug. 17, 1978	43 FR 36588-90
Proposed Endangered status and Critical Habitat for the Beaver Dam Slope population of the desert tortoise	Aug. 23, 1978	43 FR 37662-5
Proposed Endangered status and Critical Habitat for the Virgin River chub	Aug. 23, 1978	43 FR 37668-70
Proposed Critical Habitat for the Colorado squawfish	Sept. 14, 1978	43 FR 41060-2
Proposed listing and Critical Habitat determination for the Coachella Valley fringe-toed lizard	Sept. 28, 1978	43 FR 44806-2

¹ Requires supplementation only insofar as it applies to the species listed below. The remaining native taxa affected by this proposal have already been the subjects of a final rulemaking.

Molluscs:

Lampsilis satura—plain pocketbook mussel.

² Requires supplementation except insofar as it applies to the species listed below, which have already been the subject of a final rulemaking.

Snails:

Anguispira picta—painted snake coiled forest snail.

Discus macclintocki—Iowa Pleistocene snail.

Mesodon clarki nantahala—noonday snail.

Orthalicus reses—Stock Island tree snail.

Polygyriscus virginianus—Virginia fringed mountain snail.

Succinea chittendenensis—Chittendenango ovate amber snail.

Triodopsis platysayides—flat-spined three-toothed snail.

³ Requires supplementation only insofar as it applies to the species listed below. The remaining taxa affected by this proposal have either been previously withdrawn or have already been the subjects of a final rulemaking.

Insects:

Ceononycha clementina—San Clemente coenonycha beetle.

⁴ Requires supplementation except insofar as it applies to the following species, which have already been subjects of final rulemakings.

Plants:

Betulaceae, Birch family: *Betula uber*—Virginia round-leaf birch.

Brassicaceae, Mustard family:

Arabis macdonaldiana—McDonald's rock cress.

Erysimum capitatum var. *angustatum*—Contra Costa wallflower.

Crassulaceae, Stonecrop family: *Dudleya traskiae*—Santa Barbara Island liveforever.

Fabaceae, Pea family:

Astragalus perianus—Rydberg milk-vetch.

Baptisia arachnifera—hairy rattlesnake.

Lotus scoparius ssp. *traskiae*—San Clemente broom.

Vicia menziesii—Hawaiian wild broad-bean.

Hydrophyllaceae, Waterleaf family: *Phacelia argillacea*—unnamed phacelia.

Lamaceae, Mint family: *Pogogyne abramsii*—San Diego pogogyne.

Liliaceae, Lilly family: *Trillium persistens*—persistent trillium.

Malvaceae, Mallow family: *Malacothamnus clementinus*—San Clemente Island bushmallow.

Onagraceae, Evening-primrose family:

Oenothera avita ssp. *eurekaensis*—Eureka evening-primrose.

Oenothera deltoides ssp. *howellii*—Antioch Dunes evening primrose.

Poaceae, Grass family:

Orcuttia mucronata—Crampton's Orcutt grass.

Swallenia alexandrae—Eureka dune grass.

Zizania texana—Texas wild-rice.

Ranunculaceae, Buttercup family:

Aconitum noveboracense—northern wild monkshood.

Delphinium kinkense—San Clemente Island larkspur.

Scrophulariaceae, Snapdragon family:

Castilleja grisea—San Clemente Island Indian paintbrush.

Cordylanthus maritimus ssp. *maritimus*—salt marsh bird's beak.

Pedicularis furbishiae—Furbish lousewort.

⁵ Requires supplementation except insofar as it applies to the following species, which have already been the subjects of a final rulemaking.

Fishes:

Etheostoma boschungii—Slackwater darter.

Hybopsis cahnii—Slender chub.

Hybopsis monacha—Spotfin chub.

Noturus flavipinnis—Yellowfin madtom.

Speoplatyrhinus poulsoni—Alabama cave fish.

⁶ Withdrawn except insofar as it applies to the following species, which have already been the subject of a final rulemaking.

Plants:

Brassicaceae, Mustard family: *Erysimum capitatum* var. *angustatum*—Contra Costa wallflower.

Onagraceae: *Oenothera deltoides* ssp. *howellii*—Antioch Dunes evening-primrose.

⁷ Withdrawn insofar as it applies to areas C, D(3), D(4), D(5), and D(6). The other proposed areas have either been previously withdrawn or have been subjects of a final rulemaking.

RULEMAKING ACTIONS

February - March 1979

Rhesus Macaque in Bangladesh Not Eligible for Listing

Following an attempt to review the Bangladesh population of the Rhesus macaque (*Macaca mulatta*), the Service has determined that available data do not warrant its further consideration as a candidate for listing under the Endangered Species Act (F.R. 3/6/79).

A petition submitted by Dr. K. M. Green of the National Zoological Park, including supporting data on a survey of the macaque in Bangladesh,

prompted the Service to initiate review of the species' status on April 13, 1978. However, no substantive information was received in response to the Service's notice, and no comments were received from the Government of Bangladesh to support listing.

According to Service biologists, the Bangladesh population is widely distributed throughout an estimated 5,000,000-square mile area where it occurs in forests, mountainous re-

gions, river banks, and cultivated areas. It appears that Bangladesh comprises about 1 percent of the Rhesus macaque's range. The sub-species in that country is the nominate race, and is indistinguishable from Rhesus macaques occurring in China and India.

Following a thorough review of the material submitted by the petitioner, the Service has determined that the survey data were too limited to provide conclusive evidence of declines and threats substantial enough to warrant listing under current criteria, and has therefore withdrawn the species from consideration.

Two Species of Crocodiles Under Review

Based on evidence of their decline and the loss of habitat suitable for their survival, the Service has announced a status review of American crocodile populations, *Crocodylus acutus*, outside of Florida, and the estuarine crocodile, *Crocodylus porosus* (F.R. 2/5/79).

While the American crocodile ranges throughout the Caribbean Sea and on the Pacific Coast of Central and South America, the Florida population is the only one now listed as Endangered (and Critical Habitat designated).

Surveys completed in 1974 (under contract to the New York Zoological

Society) indicate that the American crocodile may be endangered throughout its South American range. Information gathered by various researchers also shows the Mexican population as endangered, rare, or absent from parts of its former range, and declining in numbers.

The estuarine crocodile, which occurs throughout Southeast Asia and Australia, is believed to be declining in most of its range as a result of hide hunting.

The Crocodile Specialist Group of the International Union for the Conservation of Nature and Natural Resources

(IUCN) recently recommended both crocodile species be included on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora—an active treaty that regulates trade in jeopardized wildlife.

Because of these factors, the Service believes a comprehensive review of the status of both species is now warranted. Pertinent data on these two crocodiles would be appreciated and should be submitted to the Director (OES), U.S. Fish and Wildlife Service, by May 7, 1979.

Withdrawals/Proposals

Continued from page 1

tion of Critical Habitat proposed for designation upon final listing. (All outstanding listing proposals will have to be supplemented with this information.)

Upon proposing Critical Habitat designation, the Service must also now include economic impact considerations—the primary reason for withdrawal of all pending Critical Habitat proposals. Other requirements include publication of Critical Habitat and listing proposals in scientific journals and

in local newspapers, and provisions for public hearings and meetings under certain circumstances. Moreover, all Critical Habitat proposals must now include a brief description and evaluation of those activities which may adversely modify the habitat area or be impacted by such a designation.

Comments will be considered in the formulation of supplements to affected proposals, which are summarized on page 5.

Reference Note

All Service notices and proposed and final rulemaking are published in the *Federal Register* in full detail. The parenthetical references given in the BULLETIN—for example: (F.R. 6/30/78)—identify the month, day, and year on which the relevant notice or rulemaking was published in the *Federal Register*.

San Esteban Island Chuckwalla Under Review

Due to the species' limited range and its increasing exploitation by the pet industry, the status of the San Esteban Island chuckwalla (*Sauromalus varius*) is being reviewed by the Service to determine if it should be proposed for Endangered or Threatened classification (F.R. 3/6/79).

In December 1978, the Service was petitioned to list the chuckwalla by Dr. Ted Case of the University of California—San Diego, who has just completed a 10-year study of the reptile. According to Dr. Case, this unique lizard—which reaches 2 feet in length and is often mistaken for the poisonous gila monster—is especially vulnerable to human predation because of its size, its extremely low reproduction rate, and its uncommonness within its specialized habitat. The chuckwalla's primary range is a single "arroyo" (or dry wash) that runs along the southeast corner of San Esteban Island, where the population is estimated at 4,500 animals.

Unless protection is given the lizard and its habitat, Dr. Case believes the



Photo by C. Kenneth Dodd

One of the largest lizards in North America, the San Esteban Island chuckwalla is well camouflaged in its preferred habitat against all predators except humans.

animals will be seriously threatened because of their increasing popularity in the exotic pet market.

All interested parties are invited to

submit pertinent information about the status of this species to the Director (OES), U.S. Fish and Wildlife Service, through June 4, 1979.

SERVICE, ARIZONA-SONORA DESERT MUSEUM HOST MEETING ON MEXICAN WOLF

The Mexican wolf (*Canis lupus baileyi*), one of the rarest wolves in the world, was the topic of a meeting sponsored by the Fish and Wild-

life Service and the Arizona-Sonora Desert Museum on February 6-7 at the museum in Tucson.

Representatives from the Service

and other Federal agencies met with Game and Fish Department employees from Arizona, New Mex-

Continued on page 8

Mexican wolf in captivity at Arizona-Sonora Desert Museum.



U.S. Fish and Wildlife Service photo

RECOVERY EFFORTS SLATED FOR CROCODILE

The Service has approved a recovery plan for the Endangered U.S. population of American crocodile (*Crocodylus acutus*), which has as its prime objective, "a self-sustaining population of American crocodiles throughout suitable habitat in the United States." The plan calls for extensive surveys to determine the location of habitat and the habitat needs of the species in all phases of its life cycle.

Crocodiles can be found in small ponds or creeks with two to five feet of water, which are protected from wind and strong currents, and are adjacent to larger bodies of water. Generally inactive during the day, crocodiles move about at night, moving into creeks, canals, and open bays primarily to feed.

Restricted to southern Florida, the U.S. crocodile population numbers only a few hundred. The Florida range currently includes the Everglades National Park, the upper Florida Keys from lower Plantation Key north to the upper end of Key Largo, and the lower Florida Keys, where a disjunct group of crocodiles are found. One estimate cites the population at 100 to 400 crocodiles, with no more than 20 breeding females.

The recovery team places the onus for the population decline (there were roughly 1,000 to 2,000 crocodiles in southern Florida near the end of the Nineteenth Century) on human activity. Crocodiles have been forced out of portions of their historic range by urbanization. Direct, human-caused mortality to crocodiles has been recorded in 14 instances between 1971 and 1977. These were mainly cases of shootings and highway road kills.

According to the team, observations indicate that crocodiles, relatively shy animals, are less tolerant of human activity than are alligators. They suggest that some of the species may have abandoned habitat solely because of human activities such as fishing and boating. (Along the north shore of the Florida Bay, which the National Park Service has seasonally closed to humans since the early 1970's, nesting activity has apparently increased.)

The recovery plan calls for the protection of sufficient habitat for all of the crocodile's needs, to be ascertained through an extensive survey effort. Then, according to the plan, the current Critical Habitat designation (F.R. 9/24/76) should be reviewed and altered if found inadequate.

Because the crocodile's status and distribution are not well known, the team states, "No quantitative goals

can be set for our crocodile population at the present time. Future research may provide a basis for specific recommendations, but a specific effort to enhance the present population is needed immediately."

Some of the immediate steps recommended by the team are:

- (1) public education, via the mass media in south Florida, on the critical status of the crocodile;
- (2) removal of eggs from "high-risk" nests for captive hatching and rearing of the young (starting with the 1978 breeding season);
- (3) an overview of ongoing and planned habitat disruption outside the Everglades National Park;

(4) a review of human-related mortality, both inside and outside the Everglades National Park; and

(5) a review of potential genetic dilution of the native population by escaped Jamaican specimens in the Fisheating Creek area. (The recovery team reports that escapees from a crocodile farm may be in Fisheating Creek and possibly mixing with native crocodiles in southwestern Florida.)

The recovery team is under the leadership of Dr. Howard W. Campbell, U.S. Fish and Wildlife Service, and includes: Richard Klukas, National Park Service; John C. Ogden, National Audubon Society; Tommy Hines, Florida Game and Fresh Water Fish Commission; Dr. William B. Robertson, Everglades National Park; and Dr. James A. Kushlan, Everglades National Park.

RECOVERY TEAMS FOR EAGLE, PRAIRIE CHICKEN

Two more recovery teams were appointed by the Service in February: one for the bald eagle (*Haliaeetus leucocephalus*), and the other for Attwater's greater prairie chicken (*Tympanuchus cupido attwateri*).

The Southeast Bald Eagle Recovery Team is the fourth Service-appointed bald eagle team to date. Only the Pacific team remains to be appointed. (Once this occurs there will be teams developing recovery plans for the bald eagle throughout the contiguous 48 States, where the species is protected by the Endangered Species Act of 1973.)

Under the leadership of Thomas M. Murphy, South Carolina Wildlife and Marine Resources Department, the

team includes: Ben Sanders, National Forests in North Carolina; Dr. Bill Robertson, Everglades National Park; Doris Mager, Florida Audubon Society; Wayne Dubuc, Morgan City, Louisiana; Steve Nesbitt, Florida Game and Fresh Water Fish Commission; and Fred Bagley, U.S. Fish and Wildlife Service.

The Attwater's Greater Prairie Chicken Recovery Team was originally under the direction of the State of Texas, but responsibility was recently turned over to the Service. On the team are: Dr. Nova Silvy, Leader, Texas A&M University; Dr. James Teer, Texas A&M University; Bill Brownlee, Texas Parks and Wildlife Department; and Wayne Shifflet, Attwater's Prairie Chicken National Wildlife Refuge.



Attwater's prairie chicken to benefit from recovery planning.

U.S. Fish and Wildlife Service photo

Mexican Wolf

Continued from page 6

ico, and Texas, plus representatives from several zoos and universities, to discuss what can be done to save the Endangered wolf. Also present was a representative of the Direccion General de la Fauna Silvestre, Mexico's wildlife agency.

The Mexican wolf has been considered extinct in the United States for many years, and it is now believed that less than 50 individuals exist in the wild, in north-central Mexico. The wolf once roamed from southern Mexico to southern Arizona and New Mexico, and south-western Texas. Animal control programs in Chihuahua and Durango, to protect cattle, are considered the principal reason for the species' decline (also the cause of its demise in the U.S.).

The Fauna Silvestre and the Service have identified the Mexican wolf as one of the top five Endangered species of mutual concern in Mexico and along our common border. For the past three years, the wolf has been receiving increased attention under the U.S.-Mexico Joint Committee on Wildlife Conservation.

"What we've got to do is establish a captive breeding program for the wolf," said Bob Stephens, Assistant Regional Director of the Service's Albuquerque Regional Office. "Our aim is to produce wolves for reintroduction to the wild, not just museum specimens for zoos. While this will take many years to accomplish, we must start our work now." Mexico has requested that the first

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	33	227	260	3	18	21
Birds	67	144	211	3		3
Reptiles	11	47	58	10		10
Amphibians	5	9	14	2		2
Fishes	29	10	39	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	20		20	2		2
Total	197	440	637	39	18	57

Number of species currently proposed: 158 animals
1,850 plants (approx.)

Number of Critical Habitats proposed: 73
Number of Critical Habitats listed: 33
Number of Recovery Teams appointed: 66
Number of Recovery Plans approved: 20
Number of Cooperative Agreements signed with States: 22

February 28, 1979

priority be given to reestablishing the wolf in preserves set aside in that country.

Those attending the meeting agreed that only Mexican wolves that have been certified as having been caught in the wild should be used for captive breeding. Existing zoo populations of this subspecies appear to be highly inbred and of questionable value for breeding stock. Eight wolves of known "pure"

lineage are in U.S. zoos, consisting of one female and seven males. Four of the males are litter mates of the lone captive female.

Meeting participants also agreed to the need for a recovery team for the Mexican wolf, to include wolf experts from the U.S. and Mexico who will make recommendations to the Service on captive breeding and future reestablishment of the animals in the wild.



ENDANGERED SPECIES TECHNICAL BULLETIN

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CONVENTION NATIONS ADOPT REVISED APPENDICES, PROCEDURAL CHANGES

Delegates from 34 of the 51 nations party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) have concluded a 2-week meeting in Costa Rica at which they voted on proposals affecting implementation of the treaty and revised the lists of species it protects.

Held in San Jose, March 19-30, this Second Biennial Meeting of the Conference of CITES Parties was also attended by representatives of 16 other countries not yet party to the Convention (including a 5-man team from the People's Republic of China), several United Nations representatives, and observers from 55 non-governmental organizations (39 of which were from the United States).

[Negotiated in 1973, the Convention essentially prohibits commercial import and export of species listed under its Appendix I (those critically jeopardized by trade) and restricts export of those listed under Appendix II (potentially threatened species). Working together, a scientific and management authority in each nation must approve import and export permits for trade in species protected under the international treaty.]

Appendices Revisions

Of the 251 proposals to amend the appendices considered by the parties, 103 changes were adopted (all by a two-thirds majority of those present and voting).

- 48 taxa were added to Appendix I or II, with all hawks and eagles, all owls, and all whales and porpoises (not on Appendix I) added to Appendix II.

- 15 taxa were removed from protection under the appendices, including the Mexican duck (*Anas diazi*), greater prairie chicken (*Tympanuchus cupido pinnatus*), and Mearn's quail (*Crytonyx motezumae mearnsi*).

- 9 taxa were moved from Appendix I to II, including the American alligator (*Alligator mississippiensis*), Atlantic sturgeon (*Acipenser oxyrhynchus*), northern elephant seal (*Mirounga angustirostris*), and lechwe (*Kobus leche*).

- 18 taxa were moved from Appendix II to I, including the Guadalupe fur seal (*Arctocephalus townsendi*), Bolson tortoise (*Gopherus flavomarginatus*), and salt water crocodile (*Crocodilus porosus*), except for the Papua New Guinea population.

- The status of 13 species was clarified, with 9 U.S. populations being noted as listed in order to control trade in similar species or populations, and not because they are threatened with extinction.

Most U.S. proposals to change the listing status of species native to this country were adopted (see February 1979 BULLETIN). Of special significance is the transfer of the alligator to Appendix II, a classification that could permit controlled international commerce in the species and its products, *providing* a regulatory change now under consideration is made concerning the status of certain American alligator populations (and procedures for controlling trade in their products) under the Endangered Species Act (see November 1978 BULLETIN). No action was taken on a change in status for the bobcat (*Lynx rufus*), trumpeter swan (*Olor buccinator*), and southern sea otter (*Enhydra lutris nereis*) as these U.S. proposals were withdrawn

Continued on page 4

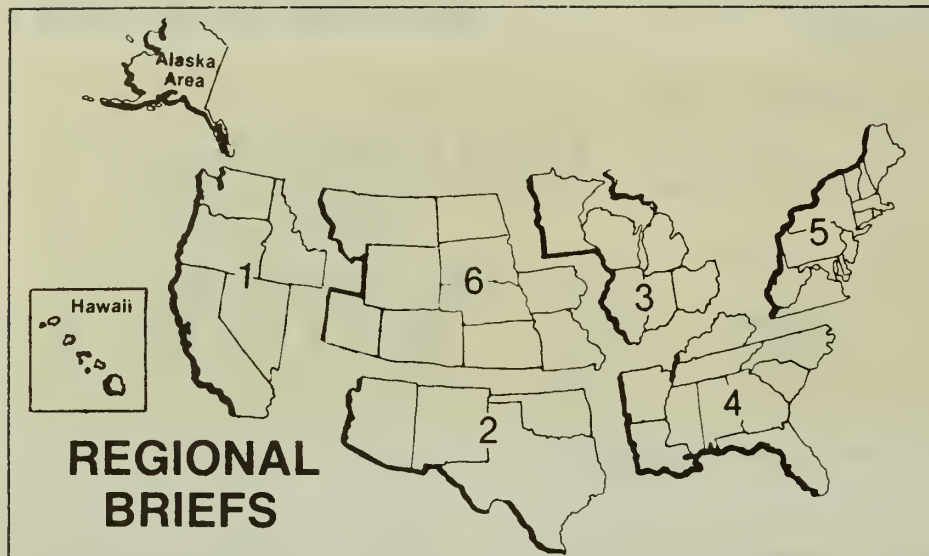


**CRIP,
SYMBOL
OF
ENDANGERED
WILDLIFE,
DIES**

**See Story
Page 6**

Crip (foreground) with former mate, Rosie, at San Antonio Zoo.

Photo by Ernest Roney



Endangered Species Program regional staffers have reported the following activities for the month of March.

Region 1. The first International Symposium on the Vultures, sponsored by the Western Foundation of Verte-

brate Zoology was held in Santa Barbara, California, March 23-26. There were two full days of formal papers and a field trip to California condor (*Gymnogyps californianus*) habitat. The conference was well attended, and there was an excellent exchange of

information between American and African representatives.

The regional office has received the go ahead to inventory candidate Threatened and proposed Endangered plants on the Desert National Wildlife Refuge in southern Nevada. Status reports were completed on two northwestern plants, *Astragalus columbianus* (occurring in Washington) and *Aster curtus* (from Oregon and Washington), and both species may soon be recommended for listing.

Region 2. Ten Chihuahuan chubs (*Gila nigrescens*) were collected from the Mimbres River in New Mexico, where the population is estimated to be less than 20 individuals. The fish were placed in the Dexter National Fish Hatchery for propagation and restocking in the Mimbres River.

Over 500 headstarted Kemp's ridley sea turtles (*Lepidochelys kempi*) were released by the National Marine Fisheries Service off west Florida as part of the U.S./Mexican cooperative effort to prevent the species' extinction (see October 1978 BULLETIN). All of the turtles were tagged and 12 were fitted with transmitters. Upon release, the turtles exhibited evasive movements.

Region 3. On March 2, regional representatives met with the Forest Service concerning proposed land exchanges. The region believes major steps were made at the meeting toward the development of guidelines for forthcoming Section 7 consultations with the Forest Service on its exchange practices.

Regional staffers also met with representatives of the Environmental Protection Agency (EPA) to discuss consultation procedures between the two agencies on EPA discharge permits and grants for water treatment facilities.

Region 4. The acquisition of Blowing Wind Cave in northern Alabama has been completed and the entrance gated to prevent human entry. This is considered the most important maternity cave known for gray bats (*Myotis grisescens*). It also provides habitat for the Endangered Indiana bat (*Myotis sodalis*) and several other species that are of special concern.

Sagittaria fasciculata, a plant known to occur in only two locations about 20 miles apart in the Carolinas, was proposed for Endangered status in 1976. An unconfirmed report indicates the North Carolina population may have been destroyed by recent work on an adjacent railroad bed. An onsite inspection is planned for April.

Region 6. The Service accepted three Labrador retrievers and one German shepherd that Region 2 and the New Mexico Game and Fish Commission contracted to have trained to "sniff out" black-footed ferrets (*Mus-*

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U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories.

Region 2: Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia and West Virginia. **Region 6:** Colorado, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Alaska Area:** Alaska.

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tela nigripes). Two Service employees will be trained in April to handle the dogs. In May, field work will begin in Region 6.

On March 1 and 2, members of the Rocky Mountain/Southwest American Peregrine Falcon Recovery Team and representatives from eight States, three Federal agencies, and the Peregrine Fund met in Denver. A reintro-

duction plan was developed for peregrines produced at the Peregrine Fund's Fort Collins, Colorado, facility in 1979.

Alaska Area. The Alaska Area Office has initiated a fledgling banding and prey species pesticide sampling operation in Alaska. Since two trapping

and banding operations are in effect at Assateague Island, Virginia, and Padre Island, Texas, area personnel anticipate an opportunity to recover some of their falcons and get some indication of migratory routes, as well as pesticide information, through blood sampling. Planning efforts are underway to initiate field work for this summer.

BALD EAGLE RECOVERY DISCUSSED AT WORKSHOP

Bald eagle recovery planning was the subject of a workshop held at the Denver Regional Office in March. Attended by leaders from three of the four Service-appointed bald eagle (*Haliaeetus leucocephalus*) recovery teams, regional endangered species coordinators, and Washington Office representatives, the workshop was a forum for discussion of problems that plague recovery for the species.

One issue of great concern raised at the workshop was banding protocol. The team leaders (Duane Rubink, Southwestern Team; Gary Taylor, Chesapeake Bay Team; and Tom Murphy, Southeastern Team) agreed that there is some confusion caused by what they consider to be unclear standards in protocol. They cited examples of similar or same color bands being issued to researchers in different areas of the country. This makes accurate counts difficult to maintain because the birds move over a wide range for wintering and other purposes. Also, numbers on the bands are usually too small to read. (The bands were designed to provide a minimum amount of discomfort and interference to the eagle in the course of its normal activities. It should also be noted that there are many more researchers banding birds than there are colors that can be easily distinguished by the human eye.)

According to William Clark, Director of the National Wildlife Federation's Raptor Information Center, who also attended the workshop, there is evidence that banding may have an effect on breeding. Clark cited a study that showed three birds to be unsuccessful in breeding after being patagially marked. Overall appearance seems to be a factor in pair bonding, according to Clark.

Also at issue was the requirement that eagles found dead be immediately turned over to the National Wildlife Health Laboratory in Madison, Wisconsin, thus depriving the States of an

opportunity to analyze fresh carcasses.

It was agreed that the team leaders would coordinate their concerns and efforts by setting up a bald eagle "steering committee" similar to the coordinating committee for the peregrine falcon.

Team leaders and endangered species coordinators presented updates on team and recovery activities. Highlights:

(1) The Pacific Team, which has not yet been appointed, will include Idaho, which was formerly part of the Northern States Team.

(2) The Chesapeake Bay Team Leader reported that transplanting of captive-produced eaglets rather than captive-produced eggs seems to offer more success for continuing the productivity of eagle nests.

LOGGERHEAD SEA TURTLES FOUND DEAD ALONG TEXAS COAST

More than 60 dead loggerhead sea turtles (*Caretta caretta*) have washed ashore along the Texas coast since the first reports were confirmed on March 9, according to Charles Fuss, Special Agent with the National Marine Fisheries Service (NMFS). Of those, approximately 45-50 percent had apparent mutilations to the neck and some had cuts on the flippers or flippers removed.

Cooperating officials from NMFS, the U.S. Fish and Wildlife Service, Texas Wildlife and Parks Department, and the U.S. Coast Guard have not

(3) Duane Rubink said that there are seven active nests, five of which are on cliffs, in the Southwestern Team's geographic area. There has been a problem with chicks falling out of these nests.

(4) The Southeastern Team was appointed in February and reports 300 active territories in Florida.

(5) The Northern States Team will hold its second meeting in Bangor, Maine, in April.

Standardization of criteria for addressing the unique needs of bald eagles when designating Critical Habitat as well as for determining what constitutes jeopardy to the species was also discussed. The consensus of opinion seemed to be that it is difficult to arrive at a standard because of the geographic differences of each population of the species, and their associated needs and threats. In fact, each Critical Habitat proposal and determination of jeopardy will ultimately have to be decided on a case-by-case basis.

been able to trace the source of the mutilations. According to Fuss, the specimens (mostly juvenile females weighing 40-60 lbs.) are smaller than typical nesting turtles. This has led investigators to believe that the incidents occurred at sea.

Special Agent Edward M. Smith, also of NMFS, has reported findings for this particular series of incidents from the Rio Grande River up to Galveston. A few of the specimens were green sea turtles (*Chelonia mydas*) and some others were unidentified.

Investigators are currently canvassing marinas, small boat operations, and commercial fisheries, and a patrol has been mounted off the coast. The Texas Shrimpers Association says it has advised its members of the protection afforded sea turtles and of the necessity of releasing sea turtles accidentally caught in their trawls.

Last year, a similar episode occurred off Cape Canaveral and investigators were never able to trace the source.

Convention Nations

Continued from page 1

prior to the conference. (Final actions on U.S. proposals are indicated in the accompanying table.)

All adopted appendices revisions will enter into force on June 28, 1979 (except for any party nation that enters a specific reservation*).

Financing the Secretariat

Among the first items for consideration at the session was a resolution requesting the United Nations Environment Program (UNEP) to establish a special trust fund for administration of the Convention Secretariat (for which UNEP support will begin to diminish in 1980). The parties agreed to interim financial arrangements involving voluntary party contributions to such a trust fund, and—although some nations would require an amendment to the Convention before making that kind of contribution—several parties (including the U.S.) indicated willingness to contribute without such budgetary provisions.

Parties in attendance adopted provisional financial procedures for the trust fund, with the U.S. pledging contributions through 1981. (The parties also agreed to an extraordinary conference of parties in June 1979 to amend the Convention and work out financial arrangements.)

Significant Procedural Actions

Many proposals to revise procedural policy in implementing the Convention were submitted during the conference. Summaries of important changes and/or clarifications follow.

- adoption (with minor changes) of U.S. proposal to define the terms "bred in captivity" and "artificially propagated" (as applied to species in Appendix I, which shall then be commercially treated as Appendix II species). Bred in captivity is to refer only to "progeny, including eggs, born or otherwise produced in a controlled environment, either of parents that mated or otherwise transferred gametes in a

*The Convention provides that any party nation may enter specific reservations before the amendments enter into force. The effect is that the nation would not be treated as a party for reserved species. While this might solve problems for that nation, it weakens the overall effectiveness of controls on world trade in the affected species. The Service does not favor the entering of reservations by the U.S. for this reason.



U.S. Fish and Wildlife Service photo

Products of the American alligator, now moved to the less restrictive Appendix II, may enter into controlled international trade upon the revision of protective U.S. regulations.

controlled environment, if reproduction is sexual, or of parents that were in a controlled environment when development of the progeny began, if reproduction is asexual."

Plants that are artificially propagated shall be only those "grown by man from seeds, cuttings, callus tissue, spores, or other propagules under controlled conditions." It is believed that uniform application of this exemption will limit the possible detrimental impact of captive breeding operations on wild populations of Appendix I and II species.

- adoption of a U.S. resolution stating (1) that hybrids may be specifically included in appendices when they form distinct, stable populations in the wild and (2) that hybrids not specifically included are covered under the Convention if one or both parents are so listed (when the more restrictive category shall apply).

- adoption of proposal to list for protection only those subspecies generally recognized as valid taxa and distinguishable from other subspecies as they occur in trade.

- adoption of a proposal to allow listing of taxa above species level only if inclusion of each member species is justified and if basis for inclusion of species is indicated (as actually threatened or as "look-alikes" for the purpose of controlling trade).

- agreement that "extremely rare" species should be included in Appendix I even if international trade is unlikely, because any trade in these species could be detrimental to their survival. (Rare species need not be so listed if addition would draw public attention to their rarity for the first time.)

- adoption of Australian recommendation that species not observed for at least 50 years, despite repeated surveys, be annotated in the appendices

as "p.e." (possibly extinct).

- adoption of clarification regarding trade in hunting trophies of Appendix I species to require that such specimens may enter into trade only when their export and purpose of import are not detrimental to the survival of the species in the wild.

- acceptance of an effective procedure easing the exchange of museum and herbarium specimens between scientific institutions (see related story).

- agreement that no permits for import, export, or introduction from the sea should be issued for commercial trade in stocks protected under the International Whaling Commission. (All cetaceans are now included on the appendices.)

- acceptance of resolution allowing the exchange of confiscated Appendix I specimens between governments for scientific, educational, or training purposes.

- acceptance of detailed guidelines for humane shipment of living specimens (while reserving the option for parties to make future changes).

- agreement to develop an illustrated identification manual and standardized appendices taxonomy for vertebrate species, and to remove or clarify all taxonomic synonyms now on the appendices lists.

Two procedural proposals were defeated. One, sponsored by the U.S., recommended the suspension of criteria adopted at the 1976 Conference of the Parties in Berne for deleting species from Appendices I or II that had been added with little or no supporting data. Many of these species could not be placed on the list under present rules because there are no data available to show that they are threatened biologically or commercially. (However, they also cannot be removed because the Berne criteria

for deletion require even more such data on population status and the impact of trade.)

A second unsuccessful proposal (opposed by the U.S.) recommended the application of trade controls to a minimum list of animal parts and derivatives rather than to all such items. A similar list had been in effect for some time in the United Kingdom,

which issued export documents only for items on its national list. (This practice caused problems for U.S. tourists and business concerns who have exported items that are not controlled by the British, only to have them seized when they arrived in this country without proper documentation.)

The parties agreed to give the cur-

rent Convention Steering Committee more permanent standing, to include more nations and to provide for staggered membership. The United States, United Kingdom, Brazil, Zaire, Nepal, and Australia all agreed to serve on the Committee (based on geographic distribution), and U.S. alternate representative Richard Parsons (Chief of the Service's Wildlife Permit Office) was elected chairman. Switzerland (as depositary nation) and hosts of the Berne and future meetings of the parties will also serve on the Committee.

India has tentatively offered to host the next biennial conference of the parties, scheduled for 1981.

Blanket Permit to Ease International Exchange of Collectors' Specimens

In response to requests by museums and others in the scientific community, the U.S. Fish and Wildlife Service has developed a "blanket" permit to facilitate the international scientific shipment, by U.S. scientists and institutions, of the preserved specimens of Endangered and Threatened species in their collections. This permit is available to all recognized educational or scientific institutions in the country. The primary difference between this type of permit and those issued in the past is the waiver of separate permits and separate notices in the *Federal Register* for each shipment.

The blanket permit does not authorize new acquisitions, collections from the wild, or loans from foreign institutions. A separate permit is still required for these activities. Only animal specimens can be covered under this blanket permit. (Plants are covered under a separate blanket permit issued in accordance with 50 CFR 17.62 and 17.72.) Shipments must be made through the designated ports of New York, Miami, Chicago, San Francisco, Los Angeles, New Orleans, Seattle, or Honolulu.

Authority under this blanket permit does not preclude the institution from complying with other regulations, such as those issued under the Migratory Bird Treaty Act or the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Blanket permits under these laws have already been developed and can be used in conjunction with the Endangered species blanket permit to cover shipments of specimens protected by more than one law.

Applications and inquiries should be directed by mail to the Federal Wildlife Permit Office, U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240, or by calling that office at 703/235-1903.

Species	U.S. proposal	Final action
Mexican duck	Delete from App. I	Accept proposal
Marsh hawk	Delete U.S. pop. from App. II	Retain in App. II for control purposes*
Trumpeter swan	Delete from App. II	Proposal withdrawn
Mearns' quail	Delete from App. II	Accept proposal
Sparrow hawk	Delete U.S. pop from App. II	Retain in App. II for control purposes*
Bobcat	Delete from App. II	Proposal withdrawn
Osprey	Delete U.S. pop. from App. II	Retain in App. II for control purposes*
Greater prairie chicken	Delete from App. II	Accept proposal
Atlantic sturgeon	Transfer from App. I to App. II	Accept proposal
American alligator	Transfer from App. I to App. II	Accept proposal
Southern sea otter	Transfer from App. I to App. II	Proposal withdrawn
Peale's peregrine falcon	Transfer from App. I to App. II	Retain in App. I for control purposes
Bald eagle	Transfer Alaska pop. from App. I to App. II	Retain in App. I for control purposes
Northern elephant seal	Transfer from App. I to App. II	Accept proposal
Golden eagle	Transfer eastern U.S. pop. from App. II to App. I	Proposal withdrawn
Guadalupe fur seal	Transfer from App. II to App. I	Accept proposal
American crocodile	Transfer U.S. pop. from App. II to App. I	Accept proposal
Bolson tortoise	Transfer from App. II to App. I	Accept proposal
Goshawk	List U.S. pop. in App. II for control purposes	Proposal withdrawn
Golden eagle	List western U.S. pop. in App. II for control purposes	Proposal withdrawn
Gray wolf	List Alaska pop. in App. II for control purposes	Accept proposal with* addition of Canada pop.
Puma	List U.S. and Canada pops. in App. II for control purposes	Accept proposal*
Bighorn sheep	List U.S. and Canada pops. in App. II for control purposes	Accept proposal*
Grizzly and brown bears	List Alaska and Canada pops. in App. II for control purposes	Accept proposal*

*Inclusion in Appendix II for control purposes was agreed by the Parties, but it will not result in formal amendment of the appendices.

IUCN's SURVIVAL SERVICE COMMISSION MEETS IN COSTA RICA

The Survival Service Commission (SSC) of the International Union for the Conservation of Nature and Natural Resources (IUCN) held its 51st meeting in Costa Rica, March 12-18.

The SSC is one of six IUCN bodies "that serves as a primary source of the scientific and technical information required for the conservation of endangered and vulnerable species of fauna and flora, and recommends and promotes measures for their preservation. Its objective is to do all in its power to prevent the extinction of species, subspecies, and discrete populations of fauna and flora, thereby maintaining genetic diversity."

The SSC, chaired by Sir Peter Scott of Great Britain, consists of an executive committee, a red data book unit, and 34 specialist groups—each composed of experts on particular groups of animals, plants, or habitats. Each specialist group is responsible for developing world conservation priorities for its group, and recommending specific actions

to the SSC, either at its meetings or to its executive council.

At the recent meeting in Costa Rica, the Fish and Wildlife Service was represented by Earl Baysinger, who has served as the SSC's Executive Officer for 1½ years; Gerry Bertrand, Chief of International Affairs; Howard Campbell of the Division of Research; and Paul Opler, Chief of Biological Support in the Office of Endangered Species.

More than 40 persons attended the meeting, including representatives from Costa Rica, Canada, Oman, Colombia, Peru, the United Kingdom, Surinam, and West Germany.

Among the topics discussed were the IUCN's failure to provide financial support for the work of the Commission, the establishment of an expanded red data book unit (possibly in England), SSC positions for the CITES meeting (see accompanying story), and reports from a number of the specialist groups.

CRIP DIES

"We've lost a national treasure," said Fish and Wildlife Service Director Lynn A. Greenwalt commenting on the death of Crip, at the time the oldest whooping crane (*Grus americana*) in captivity. Crip died unexpectedly on March 27, 1979, at the San Antonio Zoo where he was on loan from the U.S. Fish and Wildlife Service.

Crip, called "a symbol of endangered wildlife" by Director Greenwalt, was named by Service biologists who found the whooper with an injured wing in 1949 at the Aransas National Wildlife Refuge in Texas. The refuge serves as the principal wintering area for the whooping crane population from late October or early November to the middle of April. An adult bird when captured, Crip was believed to be at least in his 30's when he died.

Crip's death lowers the world whooping crane population to 109. There are 74 whoopers in the flock which migrates from the Wood Buffalo National Park in Canada to the Aransas Refuge. Ten birds have been reared by sandhill crane (*Grus canadensis*) foster parents at Grays Lake National Wildlife Refuge in Idaho. These 10 cranes are the result of egg transplants from the Wood Buffalo National Park.

In captivity, there are 22 whoopers at the Service's Patuxent Wildlife Research Center in Laurel, Maryland. Sixteen of these birds were from eggs removed from Canadian nests. They in turn have produced and reared five additional whoopers.

Crip and his three mates (Josephine, Rosie, and Ektu) produced 10 chicks in captivity, but only 2 survive.

This extensive captive breeding program, a cooperative effort between U.S. and Canadian wildlife officials, is necessary to prevent the whooping crane's extinction. Without this boost to its population numbers, delayed sexual maturity and a small clutch size (normally two eggs) may have precluded the crane's ongoing recovery following its decline to only 13 adult birds and 2 young (at Aransas) in 1941.

Oppressive temperatures in the species' northern breeding range are also thought to hinder productivity. Because the ice-free period is only 4 months long, adults must incubate the eggs for 30 days and rear chicks to flight age in 3 months. This leaves little time to lay second clutches and fledge young if the first clutch fails.

Last year, the Patuxent whoopers produced 23 eggs, most of which were sent to Grays Lake. Crip and Ektu produced six eggs this season at the San Antonio Zoo.

CRITICAL HABITAT DETERMINED FOR LEATHERBACK SEA TURTLE

In a final rulemaking, the National Marine Fisheries Service (NMFS) has designated as Critical Habitat for the leatherback sea turtle (*Dermochelys coriacea*) the waters adjacent to Sandy Point Beach, St. Croix, U.S. Virgin Islands (F.R. 3/23/79). The beach itself was previously designated as Critical Habitat for the leatherback by the U.S. Fish and Wildlife Service (F.R. 9/26/78). (NMFS has jurisdiction over listed marine species while they are in the water and the Fish and Wildlife Service has jurisdiction while they are on land.) The NMFS ruling went into effect on March 31, 1979.

The designation was made to provide protection for the species during use of these waters for courting, breeding, and access to and from nesting areas on Sandy Point Beach. Although the leatherback spends most of its life in waters 150 feet deep or more, it comes ashore to nest and lay eggs. It is believed that courtship and mating occur in the waters adjacent to the nesting beaches just prior to egg

laying.

Under the 1978 amendments to the Endangered Species Act, the economic impact of a proposed Critical Habitat designation must be considered. To this end, notice of the proposed designation was published in Virgin Island newspapers, distributed to local government personnel, and written comments were solicited from the public. Consultation with the U.S. Fish and Wildlife Service, U.S. Coast Guard, U.S. Navy, U.S. Army Corps of Engineers, and the Government of the U.S. Virgin Islands indicated that the proposed designation would not create any significant impacts.

At a public meeting to discuss the proposal (also required under the 1978 amendments), the issue of sand mining to alleviate the serious sand shortage in the Virgin Islands was raised. A two-year study to identify potential offshore sand mining sites is underway. It is possible that mining, if proposed for the Critical Habitat area, could be impacted.

ALEUTIAN CANADA GOOSE RECOVERY PLAN APPROVED

A recovery plan with the prime objective of restoring the Aleutian Canada goose (*Branta canadensis leucopareia*) to a secure status within its historic range was approved by the Service on March 7, 1979. The recovery team has further defined this objective in terms of maintaining the wild population of Aleutian Canada geese at 1977 levels of 1,160 or greater, and reestablishing self-sustaining populations of geese on three of the species' former breeding areas.

The Aleutian Canada goose, which once bred from the eastern Aleutian Islands to the Kuril Islands, now only has one known breeding population, occurring on Buldir Island in the western Aleutians. This population appears to winter primarily in California and includes an estimated 150-200 breeding pairs.

According to the recovery plan, the decline in the Aleutian's population numbers and reduction in breeding range is due largely to predation by introduced arctic foxes (*Alopex lagopus*).

Foxes were first introduced in the Aleutians about 1836 by the Russian-American Company, and the practice was continued by U.S. citizens until about 1930. In the late Nineteenth Century, an observer on Agattu Island reported that the Aleutian Canada goose "is the most abundant bird on Agattu, where it breeds by thousands." Arctic foxes were first released on Agattu in 1923, and in 1937 an observer reported "only a few pairs of geese on Agattu Island—probably less than 6 pairs in 4 days of traveling over the island." By 1962 the only known breeding population of Aleutians was on Buldir Island, one of the few Aleutian Islands on which no foxes were released.

The Service-appointed recovery team, led by John L. Martin, U.S. Fish and Wildlife Service, has detailed what it considers to be the necessary tasks to meet its two-part objective. The team recommends a statistical estimate of the breeding population during 1979, to determine if the wild population is at the 1977 levels. It

suggests that the survey be conducted every 3 years to observe trends.

Marking Aleutian Canada geese will aid in identifying the birds away from their breeding area. Migration and wintering areas will be surveyed for marked geese, and life requirements for the geese in these areas will be studied. Each summer these data will be provided to Pacific Flyway officials for determining which areas should be closed to Canada goose hunting. (Singling out the Aleutian Canada goose from other subspecies of Canada goose, such as the Cackling Canada goose (*B. c. minima*) and Lesser Canada goose (*B. c. taverneri* and *parvipes*), is not easy, as there is currently no known characteristic which absolutely distinguishes the birds. Most Aleutians have a white neck ring, but so do some of the lessers and cacklers.)

The team also recommends the protection of Castle Rock, an islet off Crescent City, California, and nearby lands in Del Norte County as they are important areas for Aleutian geese during spring and fall migration.

As for reestablishing the geese in former breeding areas, the team cites successful efforts to remove arctic foxes from several islands, including Amchitka and Agattu. They recommend that similar fox control efforts be conducted on Kanaga Island, one of the proposed release sites for captive geese.

The team has set an initial target of providing at least 200 captive-raised birds per year. Two production facilities, one at the Service's Patuxent Wildlife Research Center and the other on Amchitka, will help reach this goal. According to the plan, 40 breeding pairs will be needed at each center to achieve optimum production.

A holding facility has been set up on Amchitka to help the captive-raised geese develop a homing tradition for the Aleutian Islands and to condition them for survival in the wild. Patuxent-raised birds will be sent to Amchitka for a period of acclimatization before release.

The team recommends a delisting of the species to Threatened status after self-sustaining populations (50 breeding pairs each) have been reestablished in two areas, and a complete delisting once the geese are reestablished on a third area.

The Aleutian Canada Goose Recovery Plan, as well as other Service recovery plans, will be made available within 6 months of Service approval from the Fish and Wildlife Reference Service of the Denver Public Library. For more information contact the library at this address: Fish and Wildlife Reference Service, 3840 York Street, Unit i, Denver, Colorado 80205.

The only known breeding population of Aleutian Canada geese occurs on Buldir Island in the western Aleutians.



U.S. Fish and Wildlife Service photo



WORLD CONFERENCE ON SEA TURTLES

The World Wildlife Fund—U.S. along with other private organizations and Federal agencies will host the first World Conference on Sea Turtle Conservation at the State Department in Washington, D.C., November 26-30, 1979.

The Conference will assemble an international forum of conservationists, scientists, and government officials to address the many complicated aspects of sea turtle conservation. (The final agenda for the sessions will be announced when available.)

For registration information, write Vivian Silverstein, Conference Coordinator, 3rd Floor, 1244—19th Street, N.W., Washington, D.C. 20036 (or phone 202/659-9510).

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	33	227	260	3	18	21
Birds	67	144	211	3		3
Reptiles	11	47	58	10		10
Amphibians	5	9	14	2		2
Fishes	29	10	39	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	20		20	2		2
Total	197	440	637	39	18	57

Number of species currently proposed: 158 animals
1,850 plants (approx.)

Number of Critical Habitats listed: 34

Number of Recovery Teams appointed: 66

Number of Recovery Plans approved: 21

Number of Cooperative Agreements signed with States: 22

March 31, 1979

WOLVES RETURN TO WISCONSIN

After being extirpated from the State for nearly 20 years, gray wolves (*Canis lupus*) are again present in north-western Wisconsin. The Wisconsin Office of Endangered and Nongame Species reports that track and sight records indicate that two packs exist in Douglas County.

It is not yet known how many wolves make up the packs, but estimates range from four to eight wolves per

pack. The wolves are thought to be immigrants from Minnesota, which has the largest gray wolf population outside of Alaska.

Wolf reports from other areas of northern Wisconsin have prompted plans for a project to establish the statewide wolf status. The project may be in cooperation with Minnesota and Michigan.

In 1978, the U.S. Fish and Wildlife Service reclassified the gray wolf as a Threatened species in Minnesota, and as Endangered in the remainder of its range.



ENDANGERED SPECIES TECHNICAL BULLETIN

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GOVT. DOCUMENTS
DEPOSITORY ITEM

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SERVICE SETS GUIDELINES FOR RECOVERY PLANNING

Revised guidelines have been approved by the Service for the development and implementation of recovery plans, which are required under 1978 amendments to the Endangered Species Act. The guidelines also spell out the responsibilities and limitations of recovery teams, when it is necessary for one to be appointed to address the needs of individual species.

Under the 1978 amendments, a recovery plan must be developed for every listed Endangered and Threatened species, except when the Secretary determines that "such a plan will not promote the conservation of the species."

A recovery plan is a guide which recommends essential actions to secure or restore an Endangered or Threatened species as a self-sustaining member of its ecosystem. It provides the means for a coordinated effort between various agencies and organizations, generally aimed at reclassification of a species from Endangered to Threatened status, or a complete delisting. Although delisting is the ultimate goal of all recovery plans, immediate actions may be recommended to prevent a species' extinction.

Recovery Plan Format

To insure continuity, the guidelines suggest a format that contains three parts and an appendix for each plan. The first part is an introduction, to include information on the species' habitat needs, current and historic range, population limiting factors, status, and conservation efforts.

The second part outlines the plan's objectives and subobjectives, and should be reviewed as new information is obtained.

Part three describes the implementation of the plan. Agency assignments, priorities, and estimated funding for the actions described in the second part are identified here. This third section must be updated annually to maintain a 3-year assignment and anticipated funding schedule.

Finally, the plan carries appropriate documentation, maps, and letters of comment or concurrence from affected agencies and organizations.

The length of recovery plans will vary depending on the complexity of the issues at hand. The species' geo-

Continued on page 3

Stamps Commemorate Endangered Flora

Four Endangered plants have been beautifully captured in a block of four 15-cent stamps to be issued June 7, at a convention of The Garden Club of America in Milwaukee.

All of the species being commemorated occur in extremely limited habitats. The persistent trillium (*Trillium persiciens*), a member of the lily fam-

ily, is found only within a four-mile area of northern Georgia and South Carolina. Efforts are being made to propagate the species.

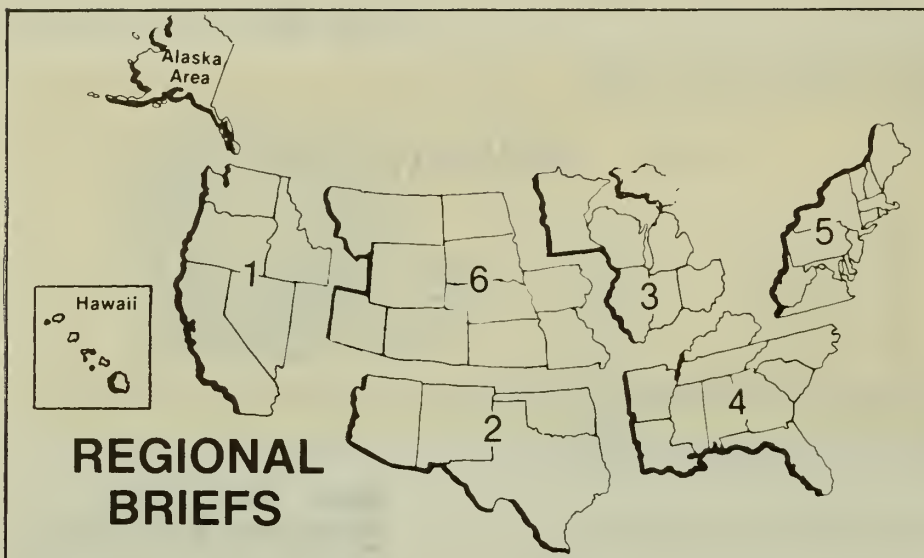
Existence of the Hawaiian wild broad-bean (*Vicia menziesii*) is regarded as precarious. This rare plant is thought to contain L-dopa, a chemical used in the treatment of Parkinson's disease.

Both the Contra Costa wallflower (*Erysimum capitatum* var. *angustatum*) and Antioch Dunes evening-primrose (*Oenothera deltoides* ssp. *howellii*) are found on the Antioch Dunes, which formerly covered about 500 acres on the south bank of the Sacramento-San Joaquin River in Contra Costa County, California. The dunes have been reduced by 90 percent due to agricultural and industrial activities.

Philatelists interested in obtaining first day cancellations may do so by buying the stamps at their own post offices and sending stamped, self-addressed envelopes with a remittance, preferably by personal check (no cash), of 15 cents for each stamp or 60 cents for each block to be affixed by the Postal Service. Send these to "Endangered Flora Stamps" at the same address. Requests must be postmarked no later than June 22.



Courtesy U.S. Postal Service



Endangered Species Program regional staffers have reported the following activities for the month of April.

Region 1. Monitoring of the Cui-ui (*Chasmister cujus*) spawning population in Pyramid Lake (Nevada) has begun—an operation also intended to

provide brood stock for hatchery propagation. (About 60 adults have been collected.) The U.S. Geological Survey installed a staff gauge in the lower Truckee River, which allows better control of the fishway operation.

One additional subadult whooping

crane (*Grus americana*) was observed at the Grays Lake National Wildlife Refuge (Idaho) on April 30. It appears that all four young whoopers in this experimental flock (three from the 1975 transplant and one placed there in 1976) will summer at Grays Lake again this year.

Displays of Endangered Oregon plants were assembled by the Portland Regional Office and shown at the National Plant Society of Oregon's annual meeting as well as at the Native Plant Flower Show in Portland. Information packages containing county lists of Endangered and Threatened plants, with material on the Endangered Species Program, were also distributed. (Additionally, the region has completed its status survey of *Mirabilis macfarlanei*, an Oregon plant, which may soon be recommended for listing.)

Region 2. Nearly 250 woundfin (*Plagopterus argentissimus*) were collected from the Virgin River by the Woundfin Recovery Team, consultants, and area and regional office representatives. The fish were transported to Dexter National Fish Hatchery for propagation and eventual reintroduction within their historic range.

The Houston toad (*Bufo houstonensis*) spawned in the Houston Zoo for the second year. (The largest single concentration of breeding adults in the wild was located during April on private land in Bastrop County, Texas.)

No individuals were located in the latest U.S./Mexican attempts to live-capture Mexican gray wolves (*Canis lupus baileyi*) in Mexico for captive breeding in the U.S. to bolster recovery of this subspecies (see March 1979 BULLETIN).

Service biologists and field crew arrived at Rancho Nuevo, Mexico, to assist Mexican biologists and marines for the second year in their efforts to protect Kemp's ridley sea turtles (*Lepidochelys kempii*). All eggs laid have been transplanted to a central "corral," adult females have been tagged, and hatchlings are being escorted on their scurry to the Gulf. (Biologists will also conduct drift surveys, radio-track offshore females, survey aerially for additional nesting sites and distribution of offshore turtles, and collect 2,000 eggs for a reestablishment attempt on Padre Island National Seashore, Texas.) Of the 100 females tagged since they began nesting on April 13, fourteen wore tags from the previous year. Over 20,000 eggs were collected from 200 nests during April.

Region 3. Regional staffers are very pleased with cooperation received from Minnesota Air National Guard personnel for their efforts to protect nesting bald eagles (*Haliaeetus leuco-*

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U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont; Virginia and West Virginia. **Region 6:** Colorado, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Alaska Area:** Alaska.

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cephalus) in the Chippewa National Forest. In response to a Service inquiry, the Air Base agreed to modify future flight patterns through the re-routing of flights and/or the termination of flights during the birds' prime incubation period, and by flying at higher altitudes, precluding the possible disturbance of breeding eagles (and the need for formal Section 7 consultation).

The Northern States Bald Eagle Recovery Team met in Bangor, Maine, in April along with representatives from various Northeastern States and other Federal agencies. (Team members hope to have a recovery plan in draft form this Fall.)

Responsibility for the handling of livestock depredations by gray wolves (*Canis lupus*) in Minnesota has been transferred to the Service's Division of Research (under the direction of L. David Mech) in an effort to improve overall effectiveness of ongoing wolf research as well as control operations. Consideration is still being given to relocating depredating wolves to portions of their former range. In the meantime, full scientific use will be made of all wolf specimens taken. Efforts are also underway to minimize wolf damage and to monitor wolf numbers in the State.

Region 4. Cooperative extension services, fish and game agencies, and other interested agencies in Tennessee, Kentucky, and the Carolinas are cooperating with the Service in the publication of a booklet and development of a slide program for the general public on endangered species of the area. Extension education programs are expected to serve as the primary means through which this information will be conveyed.

A bald eagle chick, being transported from Ohio to Maine, was fed by regional staffers during a scheduled stop in Atlanta. The chick was produced by captive eagles at the Service's Patuxent Wildlife Research Center and unsuccessfully introduced to a nest in Ohio. Before continuing to Maine, where another introduction attempt will be made, the chick dined on diced catfish.

A 1978 survey of the sea turtle nesting area on the Cape Romain National Wildlife Refuge (South Carolina) revealed raccoon predation on nearly 100 percent of the turtle nests. With more than 2,000 loggerhead (*Caretta caretta*) nests annually, Capers Island is considered one of the most important nesting beaches known for this species. A trapping program initiated this spring has thus far removed 65 raccoons. Although the catch rate is now quite low, trapping will continue to determine if raccoons are migrating

to and from the island in response to the turtle nesting season.

An onsite inspection in late April revealed that a major portion of the North Carolina population of the proposed endangered plant *Sagittaria fasciculata* has been destroyed as the result of railroad right-of-way maintenance work.

Region 5. Bald eagle chicks raised at the Service's Patuxent Center were introduced into two nests in Maine and one nest in Pennsylvania. All of the chicks were adopted by the adult birds.

Field surveys for threatened and endangered plants have begun in New Jersey. (All 13 States in the Boston Region have now initiated studies on the status of their rare plants.)

Region 6. An agreement for the study of endangered fishes of the Colorado River has been signed by Interior's Bureau of Reclamation and the Fish and Wildlife Service. The agencies will cooperate in a 2-year effort to determine habitat requirements, monitor existing habitats, expand life history information, and gather biological data on the Endangered Colorado River squawfish (*Ptychocheilus lucius*) and humpback chub (*Gila cypha*). Field work will be done

primarily in the Upper Colorado River Basin by a study team to be organized by the Service, with the participation and cooperation of the Colorado Division of Wildlife and the Utah Division of Wildlife Resources. (A cooperative agreement was executed with Utah in April under Section 6 of the Endangered Species Act.)

Alaska Area. Preparations are underway for this summer's field efforts to band fledging peregrine falcons (*Falco peregrinus tundrius*) and to sample prey species for pesticide analysis. Four major nesting areas will be studied: Colville River, Porcupine River, Yukon River (lower and upper sections). The studies will be performed through contracts with raptor biologists as well as by Service biologists.

Aleutian Canada geese (*Branta canadensis leucopareia*) have begun the spring migration from their wintering grounds in California to the Aleutian Islands. Summer field activities on the Aleutian Islands National Wildlife Refuge will include a nesting survey of the wild population on Buldir Island, propagation operations on Amchitka Island, and release efforts on Agattu Island.

RECOVERY PLANNING

Continued from page 1

graphic distribution, and the number of agencies, organizations, or individuals involved, are all factors in determining the length of a recovery plan. The plan can be relatively simple, providing only for habitat protection and management, or it can be extraordinarily complex, such as the multi-faceted approach to saving the critically Endangered California condor.

Abbreviated Plans

Occasionally, an advanced abbreviated plan may be developed for implementing immediate actions to prevent the extinction of a species. Such is the case with the leatherback sea turtle (*Dermochelys coriacea*) which faces an immediate threat from illegal egg poaching and development of hotels and condominiums on a major nesting area in the Virgin Islands. During the 1977 nesting season, 86 leatherback nests were discovered on a narrow strip of Sandy Point Beach, St. Croix, and the Service designated the area as Critical Habitat (F.R. 9/26/78).

The Service has since prepared a 3-page abbreviated plan calling for the acquisition of Sandy Point Beach to protect the leatherback's nesting area. The plan was approved by the Endangered Species Program Manager. (The National Marine Fisheries Service, in cooperation and consultation with our Service's Atlanta Regional Office, recently appointed a recovery team to develop a comprehensive plan for the recovery and management of all six listed marine turtles, including the leatherback.)

Abbreviated plans must go through the same channels for approval as the more lengthy plans. It is therefore recommended to plan developers that the use of abbreviated plans be the exception rather than the rule.

Plan Preparation

A recovery plan can be developed either by a recovery team, an assigned agency, institution, or conservation organization, or an individual who is knowledgeable in a particular species. In the latter case, the individual's services may be obtained on a voluntary or contractual basis, with the plan being assigned to an agency for coordination.

The method of plan preparation is generally selected by the appropriate

Continued on page 4

RECOVERY PLANNING

Continued from page 3

regional director based on the species' range (limited vs. extensive), complexity of anticipated recovery efforts, number of organizations involved, availability of personnel, and expertise of available personnel.

An example of a recovery plan to be prepared without the appointment of a recovery team is the one for the grizzly bear (*Ursus arctos horribilis*), which will be drafted by a specialist hired by the Service for that purpose. Also, the Portland Regional Office has drafted a unique plan for three species in the Antioch Dunes area of Contra Costa County, California—Lange's metalmark butterfly (*Apodemia mormo langei*), Contra Costa wallflower (*Erysimum capitatum* var. *angustatum*), and the Antioch Dunes evening-primrose (*Oenothera deltoides* ssp. *howellii*). The Antioch Dunes Recovery Plan (a suggested working title) is, more or less, a plan designed to stabilize this delicate ecosystem. (Normally, a multi-species recovery plan involves species which are close taxonomically, such as Hawaiian waterbirds or marine turtles, or have similar needs.)

Recovery Teams

In many cases, it is necessary for the Service to appoint recovery teams

Correction

In our discussion of bald eagle recovery on page 3 of the April 1979 issue, the third paragraph should have read:

William Clark, Director of the National Wildlife Federation's Raptor Information Center, who also attended the conference, cited a study showing evidence that color marking may have an adverse effect on the breeding success of raptors. Following the visual marking of six adult golden eagles (*Aquila chrysaetos*), representing five territories in Wyoming/Montana and Idaho, observations revealed only one apparent breeding attempt, with no eggs incubated. (All marked eagles have since left their previously active nesting territories.) These preliminary findings (soon to be published) indicate that a change in overall appearance may break the pair bond.

to develop plans. The teams consist of three to seven people, usually State and Federal Government employees and professionals from the academic or conservation communities. Team members and leaders (one for each team) are, in most cases, nominated by the regional director in consultation with the States, involved organizations, and the Office of Endangered Species. Final decisions on selection, appointment, removal, and replacement are made by the Service Director.

Team members are selected based on their agency's or organization's responsibilities for the species, expertise with respect to the species, and knowledge of the agency's responsibilities and capabilities.

The guidelines contain a list of do's and don'ts for recovery teams. A recovery team does:

- Draft a recovery plan for a species based on all available biological information.

- Seek technical input for the plan from acknowledged experts by distributing technical review drafts, if necessary. (Technical review drafts represent the team's concepts and views and do not necessarily represent the views of the Fish and Wildlife Service or any other agency. As with approved plans, drafts are subject to change.)

- Send technical review draft to regional director.

- As requested by the regional director, assist in coordinating implementation of the approved plan.

- Alert the regional director to any emergencies affecting the species, even before plan preparation or approval.

- Provide assistance, as requested, to the Director or regional director in determining ecological or other biological responsibilities of the Service toward the species.

- Assist other agencies with ecological or other biological matters involving the species, as requested and in consultation with the regional director. (This may be done only if the team is willing to do so, in which case its assistance represents team members' views, and not the views of their agencies.)

- Keep interested parties informed of its activities through team minutes or by inviting observers to team meetings, as advisable.

Recovery teams do not:

- Distribute draft plans for other than technical input.

- Implement recovery actions.

- Consult with anyone on socioeconomic, political, or administrative issues involving recovery of the species.

- Determine Critical Habitat. The team may volunteer guidance on essential habitat or be requested to recommend Critical Habitat designations to the Service.

- Inform a party that its actions may have an adverse impact on a species or its habitat. (This is the responsibility of the Secretary of the Interior as stated in Section 7 of the Endangered Species Act.)

- Act through the news media, conservation organizations, State or Federal legislators, or other parties to influence agency decisions, or in any way act as a pressure group for a particular point of view.

Minutes of team meetings are to be kept and distributed to cooperating parties, agencies, and affected States. It is important to maintain a free flow of information and ideas to and from the team. Anyone should feel free to express their thoughts on the recovery of a species to a team leader or member.

Priority System

While the Service, as far as practicable, aims to plan for the recovery of all listed species, a draft system has been developed to rank species for purposes of listing and recovery. The listing priority is based on three factors—an estimate of the degree of threat, the current availability of sufficient information to complete a rule-making, and the taxonomic status. The recovery priority system is structured in the same way, except that it includes recovery potential of the taxon instead of availability of rulemaking information.

These factors are based on three assumptions:

(1) The first step in saving any species is to prevent its extinction. Thus, the species with the highest degree of threat has the highest priority for listing and recovery. A species can be put in either a high, medium, or low category, which represents the degree of threat. The high category means extinction is almost certain in the immediate future because of a rapid population decline or habitat destruction. Medium means the species will not face extinction if listing and recovery are temporarily held off, although there is a continual population decline or threat to habitat. A species in the low category is rare, or is facing a population decline which may be a short-term, self-correcting fluctuation, or the impacts of threats to the species' habitat are not fully known.

(2) Within the above categories, resources should be used in the most cost-effective manner. Priority for recovery efforts will go to species and



Photo by J. A. Powell

Lange's metalmark butterfly is one target of a multi-species recovery plan being developed for the Antioch Dunes area in California.

projects with the greatest potential for success. Recovery potential is based on how well biological and ecological limiting factors and threats to the species' existence are understood, and how much management is needed. Every "high threat" species will receive at least the minimum efforts which will stabilize its status. After this has been accomplished, the remainder of the recovery work needed to achieve reclassification or delisting will be evaluated under the same recovery potential criteria.

(3) Taxa which are most genetically distinct should receive priority within any given category of degree of threat. Full species will be given priority over subspecies or populations.

Examples of high priority species (again, based on degree of threat, recovery potential of the taxon, and taxonomic status) are: Puerto Rican parrot (*Amazona vittata*), snail darter (*Percina tanasi*), Socorro isopod (*Exosphaeroma thermophilus*), and Hawaiian wild broad-bean (*Vicia menziesii*). Among the species to receive medium priority are: San Joaquin kit fox (*Vulpes macrotis mutica*), Kirtland's warbler (*Dendroica kirtlandii*), Arizona trout (*Salmo apache*), and American alligator (*Alligator mississippiensis*). Some of the low priority species are: southern sea otter (*Enhydra lutris nereis*), red-cockaded woodpecker,

Picoides (= *Dendrocopos*) *borealis*, Okaloosa darter (*Etheostoma okaloosae*), Red Hills salamander (*Phaeognathus hubrichti*), and Rydberg milk-vetch (*Astragalus perianus*).

State Recovery Programs

As an alternative to the procedures described thus far, recovery plans may be designed and implemented by a State, subject to Service review and the Director's approval, under certain conditions. The species to be recovered must reside entirely within the State, and the State must qualify under the Endangered Species Act to "conserve" the species and to "take the lead" for its recovery.

A State would qualify if it has entered into a cooperative agreement with the Service, or if it expresses (in writing) its desire, to the appropriate regional director, to conduct a recovery program for a species. The letter should also show that the State recognizes the overall responsibility of the Service toward the species and that the State has the authority to carry out a conservation program for the species.

If State action does not occur within a 1-year period or is unsatisfactory, coordination of the recovery effort will revert to the Service.

State recovery programs may or may not involve the use of recovery teams.

The State may select any method to implement its program and exercise complete control over it. It is the Service's responsibility under the Act to periodically review the State's program and take any necessary corrective actions.

Finalized Recovery Plans

To date, 22 recovery plans have been approved by the Service and another 28 are in the final review stages. They have all gone through a similar process: a draft is first prepared, then sent by the team to appropriate individuals for input on biological or ecological factors affecting the species (technical review draft); it is then reviewed by the regional office for biological, economic, and sociological adequacy and, upon a satisfactory finding by the regional director, is sent to all cooperating organizations for review of suggested actions relating to their responsibilities (agency review draft). The final step is approval by the Service Director.

Approved recovery plans are discussed in some detail in the BULLETIN. Those requiring more information on specific plans may obtain copies of approved plans from the Fish and Wildlife Reference Service, 3840 York Street, Unit I, Denver, Colorado 80205.

CHAPMAN RHODODENDRON ENDANGERED

A rare rhododendron, known from only three locations in Florida, has been listed by the Service as an Endangered species (F.R. 4/24/79).

Rhododendron chapmanii—a member of the heath family (*Ericaceae*), was first recommended for Federal protection in the Smithsonian Institution's report to Congress (published as a petition, F.R. 7/1/75). This rhododendron was proposed for Endangered status in a subsequent notice (F.R. 6/16/76), where it was referred to as *Rhododendron minus* var. *chapmanii*, based on a 1962 study which reduced it to infra-specific rank. (A consensus of more recent biological opinion recognizes the Florida plant as a full, distinct species, and it has been so classified on the Federal list.)

This evergreen shrub can now be found in its natural habitat only in Florida's Clay and Gulf Counties, and on the Gadsden-Liberty County line. Less than 50 specimens are known from Clay County, where the population occurs within a National Guard installation. (The remaining plants occur on private lands owned by a paper company, where habitat destruction may continue to result from mechanical site preparation techniques and from drainage of the species' habitat to increase pine production. Although one area has been reserved to protect the rhododendron, the Gadsden-Liberty Counties population has already been reduced in size due to logging activities.)

Overcollection of this appealing horticultural plant is also a threat to the species' continued existence. Once a population is discovered, all plants have been known to be removed. For this reason, Critical Habitat was not designated for the Chapman rhododendron, as detailed information on its location would likely make it even more vulnerable to collecting. (Although Florida law now limits taking of the plant, the Endangered Species Act does not prohibit the taking of Endangered plants.)



Photo by E. Laverne Smith

Habitat destruction and overcollection have endangered Rhododendron chapmanii.

BOLSON TORTOISE LISTED AS ENDANGERED

To give additional protection to this declining Mexican species, the Service has listed the Bolson tortoise (*Gopherus flavomarginatus*) as Endangered (F.R. 4/17/79).

As noted in the Service's September 26, 1978, proposal (see November 1978 BULLETIN), several factors threaten this largest of North American land reptiles. Increased plowing and irrigation throughout the species' range in the Mexican States of Chihuahua, Coahuila, and Durango are major threats which could accelerate extinction of the tortoise. (Irrigation has also encouraged increased grazing by cattle and goats, destroying browse as well as the tortoise's burrows and cover sites.)

Hunting of this large reptile (adults have measured more than a yard in length) has also contributed to its decline, as has overcollecting by private individuals, zoos, and museums.

The Bolson tortoise is also protected under the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Parties to this treaty recently voted to move the tortoise to the more restrictive Appendix I (see April 1979 BULLETIN), where its international trade will be strictly limited.

Both the Bolson and desert tortoise (*Gopherus agassizii*) will likely be the subjects of research in the coming year under the U.S.-Mexico cooperative agreement. Studies are needed to determine population parameters of these species in Mexico, to assess trends and changes due to man's activities, and to determine the species' habitat needs in order to make sound management recommendations.

(Critical Habitat was not considered for this species, which does not occur within the territorial boundaries of the United States.)

RECOVERY OUTLINED FOR DUSKY SEASIDE SPARROW

The dusky seaside sparrow (*Ammodramus maritimus nigrescens*), one of North America's rarest birds, will hopefully benefit from a recovery plan approved by the Service in April. The dusky's current distribution is restricted to the cordgrass marshes along the St. John's River in east-central Florida. According to the plan, this narrow distribution will limit the bird's recovery to the St. Johns marshes and Merritt Island, where the dusksies numbered as many as 4,000 prior to the 1950's. (The species no longer exists on Merritt Island.)

The primary reason for the extirpation of the dusky from Merritt Island has been the diking of marshes for mosquito control. Mosquito impoundments have destroyed areas of cordgrass, saltgrass, saltwort, and rush, which provide suitable habitat for the dusky. (Subsequently, the Service entered into an agreement with the National Aeronautics and Space Administration for management rights to Merritt Island.)

Habitat destruction has occurred along the St. Johns because of drainage, housing developments, conversion of marsh to improved pasture, and highway construction. Also, ranchers burn cordgrass annually for cattle grazing purposes. These ranch fires frequently become wildfires that spread through the dusky's range. According to the plan, "these birds are sedentary and have narrow habitat preferences," and higher mortality rates could therefore result because of displacement by wildfires if suitable habitat is not close by. These factors have reduced the St. Johns population from an estimated 894 singing males in 1968, to 12 counted this year. No females have been seen in the last three years. (The males sing to indicate to one another that they have established their own territory. Because they are easy to spot, singing males provide a reliable method for making population estimates.)

To meet its prime objective of restoring the species to a point where it no longer faces extinction, the Dusky Seaside Sparrow Recovery Plan recommends maintenance and development of existing and potential habitat. The plan calls for "management rights on sufficient land to serve as permanent, secure refuge." Specifically, the plan suggests the completion of the St. Johns National Wildlife Refuge acquisition to help insure the species' recovery. The plan also calls for

development of captive propagation techniques to bring the dusky back from its critically low population level.

Knowledge about the dusky's basic life history is limited. The plan outlines the need to determine the bird's food and habitat requirements as well as the optimum carrying capacity of specific sites. Other jobs mentioned

in the plan include converting selected impoundment areas on Merritt Island back to natural marsh and conducting transplants as needed (initially transplanting dusksies from the St. Johns to Merritt Island).

The recovery plan was prepared by the Service-appointed Dusky Seaside Sparrow Recovery Team. Serving on the team are: Dr. James L. Baker, Leader, U.S. Fish and Wildlife Service; Dr. Herbert W. Kale, III, Florida Audubon Society; and Lovett E. Williams, Florida Game and Fresh Water Fish Commission.

CLARIFICATION OF CONVENTION DECISIONS

In response to comments on our article about Convention actions in the April 1979 BULLETIN, we wish to clarify the record on two significant procedural actions (both on page 4, second column). The decision by the Parties to annotate species not observed for 50 years as "p.e." (possibly extinct) was based on a suggestion by Bill Clark, Vice President of Friends of Animals, Inc. Australia had raised the issue by stating that it may be inappropriate to regard species not recorded during some standardized period of time as extinct, but that there should be some way of immediately reinstating them in the appendices if they are rediscovered.

With regard to the listing of subspecies, the brief summary in the BULLETIN is best clarified by reprint-

ing the text of the recommendation adopted by the Parties: "The Convention recommends (a) that a subspecies should be proposed for inclusion in the appendices only if it is a valid taxon; (b) that where there are identification difficulties, the problem should be approached by including the entire species in Appendix I or Appendix II, where inclusion in Appendix III is inappropriate; (c) that proposals for doing so should indicate for the record which subspecies were considered to be under actual or potential threat, and which were proposed to be included because of the need to effectively control trade in other species or subspecies; (d) that the Secretariat request the Parties to volunteer experts to consider, in accordance with points (a)-(c) above, the subspecies remaining on the appendices with a view in each case to recommend the Parties to act on the issue not later than at the third meeting of the Conference of the Parties."

ENDANGERED SPECIES SCIENTIFIC AUTHORITY

Notices—April 1979

Composed of representatives from seven Federal agencies, the Endangered Species Scientific Authority (ESSA) was established by Executive order to insure the scientific soundness of governmental decisions concerning trade in endangered species of animals and plants. As the U.S. Scientific Authority for the Convention on International Trade in Endangered Species of Wild Fauna and Flora, ESSA reviews applications to export and import species protected under the Convention, reviews the status of wild animals and plants impacted by

trade, monitors their trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

ESSA Ready Procedures/Findings for 1979-80

In line with its responsibility to insure that export of U.S. species listed under the Convention's Appendix II will not be detrimental to their continued survival, ESSA is developing policies and procedures and gathering data on which to base findings during 1979-80.

Seven species are now the subjects
Continued on page 8

Scientific Authority

Continued from page 7

of special review by ESSA: the American alligator (*Alligator mississippiensis*), moved to the less restrictive Appendix II at the second meeting of CITES parties this past March (see April 1979 BULLETIN), bobcat (*Lynx rufus*), lynx (*Lynx canadensis*), river otter (*Lutra canadensis*), Alaskan brown bear (*Ursus arctos*), Alaskan gray wolf (*Canis lupus*), and American ginseng (*Panax quinquefolius*).

In its advance notice (F.R. 4/30/79), ESSA notes that Appendix II may include, under Article II 2(a), "all species which although not necessarily now threatened with extinction may become so unless trade in specimens of such species is subject to strict regulation in order to avoid utilization incompatible with their survival."

Under Article II 2(b), Appendix II may also include "other species which must be subject to regulation in order that trade in specimens of certain species referred to in sub-paragraph (a) of this paragraph may be brought under effective control."

In order to find in favor of export, ESSA must address (for species under 2(a) above) the potential effect of exports on the listed species itself (to insure that such export will not be detrimental to the continued survival of the species in the wild). For species listed under 2(b), ESSA must address how such exports may affect the status of species included in Appendix II under Article II 2(a), or included in Appendix I.

For species listed under the provisions of Article II 2(b)—such as the Alaskan brown bear and Alaskan gray

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	33	227	260	3	18	21
Birds	67	144	211	3		3
Reptiles	11	48	59	10		10
Amphibians	5	9	14	2		2
Fishes	29	10	39	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	21		21	2		2
Total	198	441	639	39	18	57

Number of species currently proposed: 158 animals
1,850 plants (approx.)

Number of Critical Habitats listed: 34
Number of Recovery Teams appointed: 66
Number of Recovery Plans approved: 22
Number of Cooperative Agreements signed with States: 23

April 30, 1979

wolf—ESSA will only consider the potential impact of their export on other populations of the same species. For species such as American ginseng, where the purpose of listing was not referenced, ESSA will treat the species as included under the provisions of Article II 2(a), and will therefore address the impact of trade on the species itself.

However, for the river otter, bobcat, lynx, and alligator, for which the purpose for listing is either specifically referenced as under 2(a) or (b), or when the purpose is unclear but implies the need for trade monitoring, ESSA intends to base findings on the potential effects of trade on their own

survival as well as on other species in the taxa (a departure from last year's policy).

Although guidelines have not yet been developed on which to base export findings under 2(b), criteria will likely be based on the ability to distinguish specimens from associated species, and so may prescribe specific conditions (such as tagging or marking) to support a finding of no detriment. (ESSA intends to publish proposed procedures along with its proposed findings for appropriate species for 1979-80 in the *Federal Register* over the next couple of months, with ample time provided for public comment.)



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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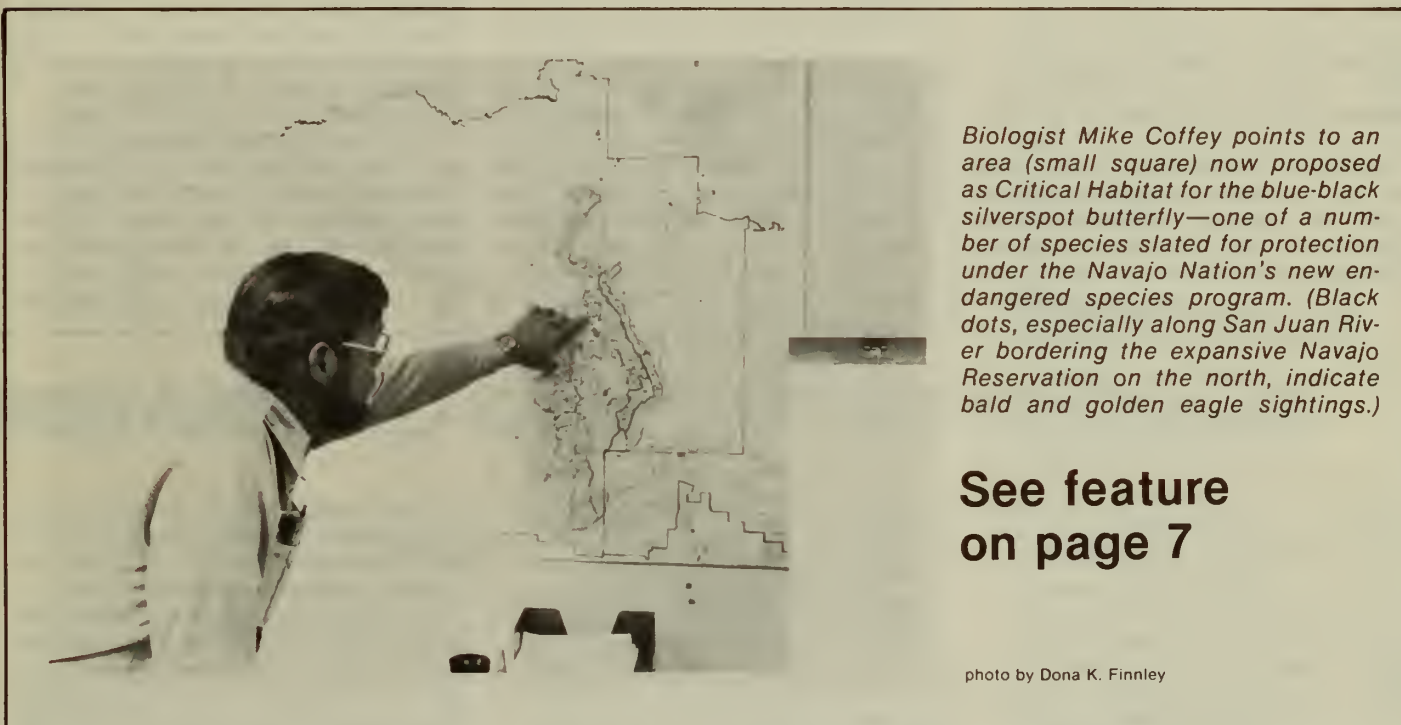
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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



Biologist Mike Coffey points to an area (small square) now proposed as Critical Habitat for the blue-black silverspot butterfly—one of a number of species slated for protection under the Navajo Nation's new endangered species program. (Black dots, especially along San Juan River bordering the expansive Navajo Reservation on the north, indicate bald and golden eagle sightings.)

**See feature
on page 7**

photo by Dona K. Finnley

SERVICE RELAXES STATE ELIGIBILITY FOR COOPERATIVE AGREEMENTS

The Service has finalized new regulations concerning State cooperative agreements under the Endangered Species Act of 1973—a measure which eases eligibility requirements for States wishing to receive Federal grant-in-aid funds for the conservation of their endangered and threatened species (F.R. 5/31/79).

Service action was prompted by two amendments to the Endangered Species Act—one signed by President Carter on December 19, 1977, providing an alternative set of requirements under which States may qualify for cooperative agreements with the Service, and another contained in the comprehensive Endangered Species Act Amendments of 1978, providing for co-

operative agreements to conserve protected plants.

As called for under the 1977 amendment (which also extended authoriza-

tion for appropriations under Section 6 of the 1973 Act), the Service had proposed regulations (F.R. 8/30/78) to

Continued on page 4

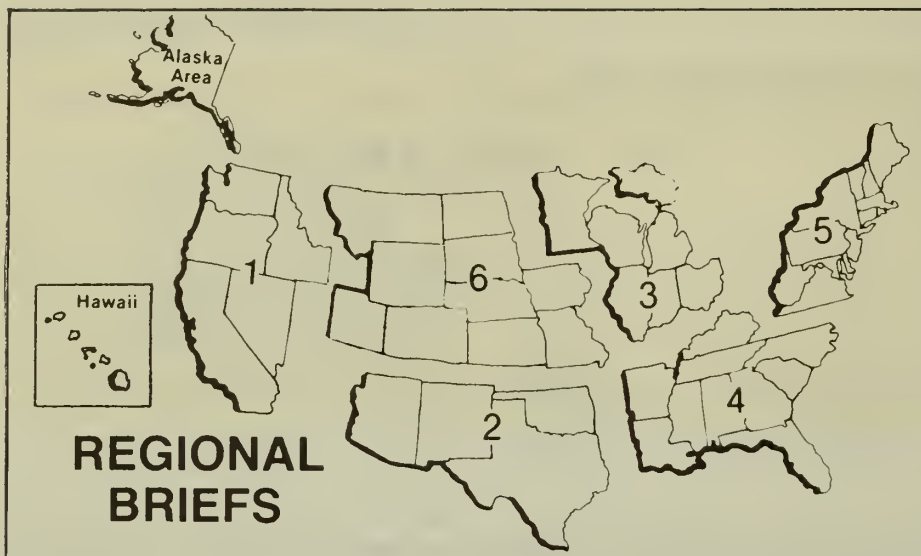
STATUS OF SPECIES LISTED PRIOR TO 1975 UNDER REVIEW

In line with 1978 amendments to the Endangered Species Act, the Service is conducting a review of all Endangered and Threatened species listed prior to 1975 to ensure that their present classification reflects their true status in the wild (F.R. 5/21/79).

As provided under amendments signed by President Carter on November 10, 1978, the Service must conduct

a review of each listed species at least once every five years. Of the 696 native and foreign species currently on the U.S. List of Endangered and Threatened Wildlife and Plants, 382 are the subjects of this review. (Species that have been affected by reclassifications for all or significant parts of their populations since 1975 are not included.)

Continued on page 4



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of May.

Region 1. An effort to improve habitat for Endangered Hawaiian waterbirds at Hanalei National Wildlife Refuge, through vegetation clearing,

is about 60 percent complete. Clearing is confined until a surface archaeological survey has been made. Upon completion of this survey, a survey on the proposed route for the Hanalei water delivery system will begin. Also on Hanalei, eight gallinule (*Gallinula chloropus sandvicensis*) nests were

found, as were the first stilt (*Himantopus himantopus knudseni*) nests of the season.

On Oahu, 93 stilts have been color banded for research on the species' reproductive biology. Forty-four new stilt nests were located and are being observed.

Marabalis mactarlanei has been relocated in the Snake River Canyon on the Oregon-Idaho border. The entire distribution of this species, which may be recommended for listing, consists of 20 plants at two locations. Several of the plants appear diseased and are further threatened by collectors.

Region 2. The Point Defiance Zoological Park in Tacoma, Washington, reported the birth of 26 red wolves (*Canis rufus*), 15 of which survived. Four of these are being hand-reared. A current status summary for the species has been completed and will be published in the near future.

The Service has registered in the American Association of Zoological Parks and Aquariums' ISIS program (International Species Inventory System) for the red wolf. Each animal is assigned a unique number by ISIS based on taxonomic grouping and the

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U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont; Virginia and West Virginia. **Region 6:** Colorado, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Alaska Area:** Alaska.

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REGULATIONS

The Service has proposed regulations to relax the restrictions on activities concerning captive wildlife because current regulations tend to hinder propagation efforts. The proposal would grant general permission to the public to take, engage in interstate or foreign commerce, and conduct certain other prohibited activities (under the Endangered Species Act) with captive-bred wildlife, provided these activities are conducted to enhance the propagation or survival of the species.

The regulations would apply only to exotic species and native U.S. species sufficiently protected in the wild, and would require permittees to register and report activities to the Service.

When the Endangered Species Act and implementing regulations were first put into effect, many routine activities involving captive propagation of Endangered and Threatened species were prohibited and could only be authorized by permit. This brought complaints of newly created legal problems from circuses and animal dealers as well as from zoos and breeders of cats, pheasants, waterfowl, and other animals. They argued that they owned the animals in question and that what they did with them in cap-

institution in which it is housed. ISIS provides three annual reports (*Species Distribution Report*, *Inventory Report*, and *Acquisition/Release Report*) for the purpose of maintaining up-to-date records on the numbers, distribution, and types of specimens in zoos worldwide.

Region 3. Several Service representatives attended the Upper Mississippi River Conservation Committee Symposium on Bivalve Mollusks, May 3-4, 1979, in Rock Island, Illinois.

Region 4. The Red-cockaded Woodpecker Recovery Team met in Charleston, South Carolina, to continue preparations for a rangewide survey of the species. The survey, co-sponsored by our Service and the U.S. Forest Service, will take place this fall and winter.

Region 5. A female peregrine falcon (*Falco peregrinus*) is reported to be sitting on two fertile eggs at a hack site in New Jersey. If these eggs hatch, it will be the first time in 20 years that wild peregrines of the eastern United States have successfully produced young.

SERVICE PARTICIPATES IN PLANT SYMPOSIUM

A symposium on Rare and Endangered Plant Species in New England was held at Harvard University May 4-5. Sponsored by the New England Botanical Club (NEBC) in cooperation with the U.S. Fish and Wildlife Service, the conference was attended by more than 300 persons from the Eastern United States and Canada. Major areas of discussion were Biology of Endangered Species, Plant Conservation Concerns in the New England States, and Conserving Rare Plants and their Habitats.

During the proceedings, Deputy Boston Regional Director William C. Ashe (*above center*) presented the Service's Citizen's Award to Dr. William D. Countryman (*left*), Chairman of NEBC's Rare and Endangered Species Committee. A Special Achievement Award (accepted by Club President Dr. Alice Tryon, *right*) went to all of the members of NEBC for their efforts to conserve New England Flora.

Dr. Countryman was honored for his personal dedication to conserving

U.S. Fish and Wildlife Service photo



and protecting New England's rare and endangered plant species. He helped coordinate a project, under partial sponsorship of the Service's Office of Endangered Species, which resulted in detailed reports on the rare, endangered, and threatened plants of each New England State (now available from the Service's Boston Regional Office).

Presentations or abstracts will be published in the January 1980 issue of *Rhodora* (volume 82), the NEBC journal.

PROPOSED TO EASE CAPTIVE BREEDING

tivity had no effect on wild populations.

Currently, the Service is dealing with the problem through regulations for Captive Self-Sustaining Populations of Endangered Species (CSSP's) (F.R. 6/1/77), under which 11 Endangered species in captivity in the United States are now treated as Threatened species. (The Endangered Species Act provides that prohibited activities such as taking, importation, exportation, and interstate or foreign commerce may be allowed for an Endangered species only for scientific purposes or to enhance the propagation or survival of the species. Such activities, when applied to a Threatened species, may be allowed for the same reasons plus economic hardship, zoological exhibition, educational purposes, or special purposes consistent with the purposes of the Act.)

The CSSP regulations made permit requirements simpler. Permit holders could freely engage in interstate commerce among one another. However, problems still existed for animal breeders. For instance: the regulations do not promote the propagation of species not qualified for CSSP status; the CSSP list is too limited and additions are difficult to effect; and permit requirements place a heavy burden on

the public. Moreover, classifying CSSP's as "species" distinct from wild populations of the same biological species is an artificial distinction.

Having administered the CSSP system for nearly two years, the Service has decided that a change is in order. Comments from the public on an advance notice on this same topic overwhelmingly supported less restrictive controls. The Service holds the view that the Endangered Species Act requires regulation of activities involving captive as well as wild populations of Endangered and Threatened species. This view has been confirmed by Congress, in recent action specifically exempting from certain prohibitions of the Act any raptor legally held in captivity or in a controlled environment on the effective date of the Endangered Species Act Amendments of 1978.

Wild populations stand to benefit from captive breeding, which can help replenish wild populations, reduce the need to remove specimens from the wild for scientific or other purposes, and provide opportunities for research, leading to improved management of wild populations.

Some activities involving captive wildlife, if not regulated, can have det-

rimental effects on wild populations. Consumptive uses could create a demand for products which might be further satisfied by wild populations; illegally-taken wild specimens could be claimed as captive-produced; and captive propagation could be supported with a continuous supply of wild-caught animals.

Through its proposed regulations, the Service is attempting to encourage captive propagation that will enhance the survival of Endangered and Threatened wildlife while discouraging activities that have detrimental effects on populations in the wild. To promote the protection of wild populations, a carefully structured definition of "bred in captivity"—identical to that adopted by the nations party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora at their March meeting in Costa Rica (see April 1979 BULLETIN)—would be used in the new regulations.

The Service proposal would apply to any native Endangered or Threatened species which is considered secure in that (1) it is in low demand for taking from the wild because of success with captive propagation, (2) its habitat is considered inaccessible, and

Continued on next page

(3) its population in the wild could be effectively protected if captive-bred populations were not as strictly regulated. (In accord with these proposed criteria, the Service has determined that one U.S. species, the Laysan teal (*Anas laysanensis*), would be eligible under the captive wildlife provisions.)

Under the proposal, importations would be allowed for the return of captive wildlife previously exported from the United States and identifiable as originating in this country. Import controls would give general protection to wild populations of exotic species. Exportation would be allowed if it was for the purpose of enhancing the propagation or survival of the species, and if the foreign recipient was qualified to undertake related activities.

Also, provided it is done to enhance the propagation or survival of the species, the Service proposes a lessening of the restrictions on interstate commerce in Endangered and Threatened species. The definition of "enhance the survival" (finalized on June 1, 1977), would also be expanded under the captive wildlife ruling to include the provision of health care, culling, contraception, grouping and handling of wildlife, and similar normal practices of animal husbandry.

Because the Service believes that activities involving captive wildlife should be regulated only to the extent necessary to conserve the species, with an emphasis on conserving wild populations, it does not wish to place an undue burden of paperwork on persons wanting to engage in otherwise prohibited activities. Persons wanting to conduct such activities would be required to register with the Service. Registration requirements would be based on standards set by the U.S. Department of Agriculture under the Animal Welfare Act (appropriate for all warm-blooded animals (mammals and birds)). Similar standards with appropriate adjustments would have to be met by persons working with cold-blooded animals.

The proposed registration requirement differs from the existing one for permits in that persons would no longer have to show past experience in caring for a particular type of wildlife or describe the containers and treatment for wildlife being transported or temporarily stored. Anyone with a Department of Agriculture registration or license can register with the Service.

Persons with valid CSSP permits or other Endangered or Threatened species permits for captive-bred exotic wildlife would only have to write the Service to request registration. (The Service could then use information already on hand from the permit application.)

To monitor activities involving captive-bred wildlife, the Service proposes to require registrants to submit:

(1) Reports of each transaction involving otherwise prohibited activities within 10 days of its completion;

(2) Written descriptions of identifying marks on captive-bred wildlife (to be exported and later reimported) to the Service prior to export;

(3) Semiannual written reports on any taking of captive-bred wildlife that results in its death or permanent loss

of reproductive ability; and

(4) Documentary evidence that the recipient of exported captive-bred wildlife has proper facilities and expertise, and will use the wildlife for purposes of enhancing the propagation or survival of the species.

Comments on the proposed regulations should be submitted to the Director, U.S. Fish and Wildlife Service, Federal Wildlife Permit Office, Washington, D.C. 20240, on or before July 23, 1979.

SERVICE RELAXES STATE ELIGIBILITY FOR COOPERATIVE AGREEMENTS

Continued from page 1

allow State fish and wildlife agencies to participate in the cooperative agreement/matching fund program even when they are not empowered to manage all federally-listed species resident in the State (see September 1978 BULLETIN).

Essentially, the 1973 Act required States to have adequate authority in areas such as law enforcement, research, and habitat acquisition, as well as active programs for the conservation of their resident, *federally-listed* Endangered and Threatened species of wildlife [as stipulated under Sections 6(c)(1) and (2)] to qualify for the agreements. As mandated under both the 1977 and 1978 amendments, Service regulations now provide for matching fund assistance to any State meeting certain criteria within subsections 6(c)(1) and (2), and having plans "under which immediate attention will be given to those resident species of fish and wildlife or plants which are determined by the Secretary and the State agency to be endangered or threatened and which the Secretary and the State agency agree are most in need of conservation programs . . . (emphasis added)."

In determining which Federal or State-listed species are "urgently in need of conservation programs," the Secretary will apply the following criteria:

(1) the degree of threat to the continued existence of the species;

(2) the recovery potential of the species;

(3) the taxonomic status (giving full species priority over subspecies or populations); and

(4) such other relevant biological factors as determined appropriate. (In addition to the above, States need not be authorized to acquire habitat for listed plants.)

States already possessing broad authority and wishing to undertake conservation programs for all federally-listed species may still do so and will remain eligible for matching funds under the cooperative agreement program.

To facilitate administration of the grant-in-aid program, the Service will evaluate species in need of conservation programs and allocate Federal matching funds to qualifying States and U.S. Territories on a semiannual basis.

STATUS OF SPECIES LISTED PRIOR TO 1975 UNDER REVIEW

Continued from page 1

Following the receipt of significant new information, proposals to modify the classification of the subject species (and/or to designate their Critical Habitats) could be warranted.

The Service is soliciting comments and information from the public, other governmental agencies, the scientific community, and other interested parties on the status and current threats to the species as well as appropriate recommendations for protection of essential areas as Critical Habitat. Data on the species' numbers and distribution, the specific area, features, and

importance of any habitat critical to their survival, and supporting documentation such as maps, bibliographic references, reports, and letters from authoritative sources will all be considered in the review process.

We regret that limited space precludes us from printing the entire list of species that are subjects of this review, but ask that you consult the May 21, 1979, *Federal Register*. Comments and data should be submitted to the Director (OES), U.S. Fish and Wildlife Service, Washington, D.C. 20240, no later than August 20, 1979.

Ban Upheld On Cayman Turtle Products

Cayman Turtle Farm, a mariculture operation on Grand Cayman Island in the British West Indies, has maintained turtles in captivity for several years, exporting products such as turtle shell jewelry, meat, leather, and turtle oil to the U.S. and other countries.

With the promulgation of special regulations on July 28, 1978 (along with the listing of the green sea turtle, *Chelonia mydas*, as a Threatened species), the importation of products of all six listed marine turtles into the U.S. was prohibited *without* exception for commercial mariculture operations (with a one-year grace period for interstate commerce in turtle products—see August 1978 BULLETIN). On September 5, 1978, (the day before the Fish and Wildlife Service/National Marine Fisheries Service regulations took effect) Cayman filed suit in the U.S. District Court for the District of Columbia, challenging the regulations. (FWS and NMFS subsequently agreed to stay enforcement of the pertinent prohibitions pending court review.)

On May 29, 1979, Judge John Pratt denied Cayman's motion, holding that



photo by Dona Finnley

Tourists at Cayman Turtle Farm browse at sea turtle products now banned from importation into the U.S.

the administrative record of the two Services clearly supported their decision to prohibit importation of sea turtle parts or products. The court agreed that the importation of products from mariculture operations would create an incentive to establish other farms which would at least initially depend on eggs taken from the wild, thereby harming wild populations by stimulating an increase in the demand for sea turtle products and illegal poaching.

The court further upheld the Services' authority to adopt even stricter domestic controls than those (now protecting sea turtles) under the Convention on International Trade in Endangered Species of Wild Fauna and Flora, noting that a blanket exception

for Cayman's products would be inconsistent with the Convention since its products did not comply with the "bred in captivity" definition recently agreed to by the party nations in Costa Rica (see April 1979 BULLETIN). Finally, the court held that Cayman had not achieved closed-cycle operations (where all farm hatchlings are produced from parents which were farm hatchlings) and that, even if it had been able to make such a showing, the policies underlying the Act and the Convention were sufficiently strong to prohibit importation.

Import restrictions are now in effect, with interstate commerce regulations becoming effective after September 6, 1979.

Rulemaking Actions

June 1979

ENDANGERED SPECIES SCIENTIFIC AUTHORITY

Notices—May 1979

Composed of representatives from seven Federal agencies, the Endangered Species Scientific Authority (ESSA) was established by Executive order to insure the scientific soundness of governmental decisions concerning trade in endangered species of animals and plants. As the U.S. Scientific Authority for the Convention

on International Trade in Endangered Species of Wild Fauna and Flora, ESSA reviews applications to export and import species protected under the Convention, reviews the status of wild animals and plants impacted by trade, monitors their trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

ESSA Proposes Findings in Favor of Alligator Export

Largely due to Federal, State, and other conservation efforts, the American alligator (*Alligator mississippiensis*) has made a dramatic comeback in portions of the Southeastern United States, with its populations stabilized or increasing in many areas. As a result, the species was essentially removed from protection in three Louisiana parishes in 1975 through its reclassification as "Threatened—Similarity of Appearance (T-S/A)" under the Endangered Species Act, permitting regulated hunting in these areas under State management.

In 1977, alligators throughout Florida, Georgia, Texas, and remaining coastal areas of Louisiana were reclassified to "Threatened" status, a ruling which allowed the legal take of "nuisance" gators by Florida State wildlife agents acting under the authority of a cooperative agreement with the Fish and Wildlife Service. (Reclassification of additional populations to T-S/A is now under consideration for 9 additional Louisiana parishes.)

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The alligator's improved status recently prompted the 51 nations now partly to the Convention on International Trade in Endangered Species of Wild Fauna and Flora to relax protection of the species through its transfer from the Convention's Appendix I to Appendix II, a less restrictive category (see April 1979 BULLETIN). With its new Convention status, effective June 28, 1979, regulated commercial export of the alligator could be permitted upon a finding by ESSA that such activity will not prove detrimental to the species' survival in the wild and (in line with ESSA policy as discussed in the May 1979 BULLETIN) will not jeopardize other protected species of crocodilians.

ESSA has proposed to conditionally approve limited export of American alligators legally killed in Florida or Louisiana on or after June 28, upon a finding of no detriment (and contingent upon the revision of special Service regulations to facilitate law enforcement).

Because products of look-alike crocodilians are difficult to distinguish from those of alligators, and because trade in alligators could stimulate trade in similar protected species, ESSA proposes three conditions on export (should it be allowed) to ease enforcement: (1) Foreign buyers, tanners, and fabricators must be subject to U.S. licensing requirements similar to those currently in force within the United States; (2) Exports must be allowed only to licensed buyers, tanners, or fabricators located in countries which have ratified the Convention, and which have not taken reservations against Convention controls on trade in endangered species of crocodilians; and (3) Prior to export, all hides must be indelibly marked over their entire reverse surface with identifying symbols.

Comments on the proposed rule-making should be addressed to the Executive Secretary, Endangered Species Scientific Authority, 18th and C Streets, N.W., Washington, D.C. 20240.

Status of Guam Species Under Review

At the request of the Government of Guam, the Service is reviewing the status of 12 species from that island to determine if they should be listed as Endangered or Threatened species, and their Critical Habitat designated (F.R. 5/18/79). Under review are 10 birds and 2 mammals whose existence is reported to be threatened by a variety of factors.

- Marianas fruit dove (*Ptilinopus*

roseicapillus) numbers approximately 100 on Guam, and probably less than 500 exist (inclusive of those on Rota, Tinian, and Saipan). The species has suffered habitat loss due to urbanization.

- Marianas gallinule (*Gallinula chloropus guami*) has declined due to loss of suitable freshwater wetlands through draining for agriculture. Less than 100 are found on Guam and less than 50 on Tinian. The population numbers on Saipan and Pagan are unknown.

- Guam rail (*Rallus owstoni*), a flightless species, has suffered from introduced predators. The population on Guam is estimated at 500-1,000 birds.

- Edible nest swiftlet (*Collocalia inexpectata bartschi*) is a victim of insecticides and herbicides used during and after World War II. From 100-200 individuals are found on Guam, while the numbers on Rota, Tinian, and Saipan are unknown.

- Marianas fruit bat (*Pteropus mariannus mariannus*) has declined to a population numbering less than 100 on Guam because of habitat destruction and illegal hunting.

- Little Marianas fruit bat (*Pteropus tokudae*) also is suffering from habitat loss and illegal hunting.

- Micronesian kingfisher (*Halcyon cinnamomina cinnamomina*) has been reduced to a population on Guam of 100-150 birds due to loss of native limestone forest.

- Micronesian broadbill (*Myiagra oceanica freycineti*) is another victim of urban development. Fewer than 100 birds remain on Guam.

- White-throated ground dove (*Gallicolumba xanthonura xanthonura*) has declined to less than 100 on Guam because of urbanization, use of World War II defoliants, damage from typhoon Pamela in 1976, and illegal and accidental shooting during the hunting season for other birds.

- Cardinal honey-eater (*Myzomela cardinalis saffordi*) is restricted to remaining areas of pristine limestone forest in the northern cliffline. There are about 100-200 individuals on Guam.

- Marianas crow (*Corvus kulbarzi*), like all crows, is considered by many to be a pest and therefore shot by hunters and poachers. An estimated 100-150 birds remain on Guam.

- Bridled white-eye (*Zosterops conspicillata conspicillata*) has faced habitat loss and decline in numbers from urbanization, insecticides, and typhoon Pamela.

Critical Habitat has been recommended by Guam's Acting Governor Joseph E. Ada on an area of the northern cliffline for the Micronesian king-

fisher, Micronesian broadbill, white-throated ground dove, cardinal honey-eater, Marianas crow, and bridled white-eye. Critical Habitat was also recommended for the Marianas fruit dove and Marianas gallinule. No Critical Habitat recommendations were made for the Guam rail, edible nest swiftlet, Marianas fruit bat, and little Marianas fruit bat.

The Service is interested in obtaining information on essential habitat areas and on the status of these 12 species on other islands as well as Guam to determine whether they should be listed throughout their ranges or just on Guam.

Comments and data should be submitted to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240, on or before August 18, 1979.

NMFS Lists Totoaba As Endangered

The totoaba (*Cynoscion macdonaldi*), a marine fish found exclusively in Mexican waters in the Gulf of California, was determined by the National Marine Fisheries Service (NMFS) to be an Endangered species throughout its range (F.R. 5/21/79). This listing is based on a joint proposal by NMFS and the Fish and Wildlife Service (F.R. 12/30/76).

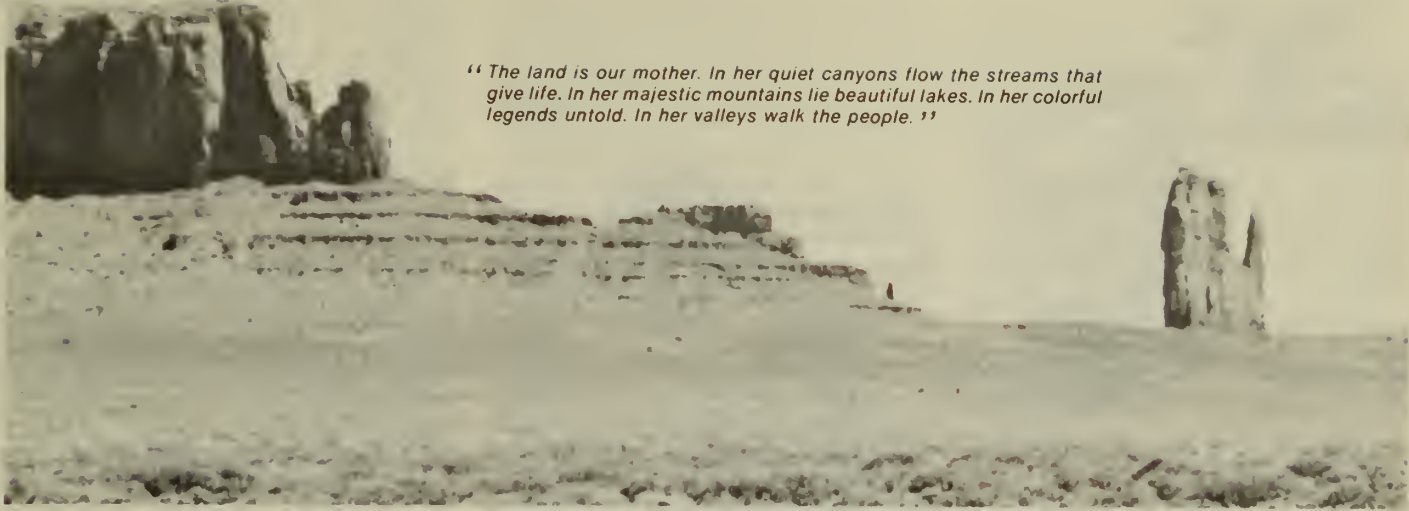
Reduction in the flow of the Colorado River into the Gulf of California (because of the Hoover and Morelos Dams) has resulted in the alteration of the totoaba's spawning and nursery habitat—one reason for the initial decline of the species. According to a report on the NMFS 1978 workshop to evaluate the biological status of the species, other reasons for its decline in the 1940's and '50's were overfishing by directed fisheries and incidental take in the shrimp fishery, and possibly contamination from insecticides.

The totoaba, the largest species of the genus *Cynoscion* in the family *Sciaenidae*, has been recognized as a protected species by the Mexican Government since 1975. Since the fish only occurs in Mexican waters, no Critical Habitat has been designated.

Seven Molluscs Under Review

The status of seven Endangered molluscs will be reviewed by the Service to determine whether they should retain their Endangered status, be reclassified as Threatened, or be removed from the U.S. List of Endan-

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"The land is our mother. In her quiet canyons flow the streams that give life. In her majestic mountains lie beautiful lakes. In her colorful legends untold. In her valleys walk the people."

ENDANGERED SPECIES: NEW CHALLENGE FOR THE NAVAJO

Considered the largest tribe of native Americans in the United States, the Navajo Indians number more than 150,000, with the Navajo Reservation stretching to more than 16 million acres—larger than several Northeastern States. Bordered on the north by the San Juan and Colorado Rivers, the Navajo Nation occupies more than one fourth of the State of Arizona, and smaller portions of New Mexico and Utah.

First recognized as an ethnic group from dwellings dating around the 15th Century, much of "Old Navajo Country" was under Spanish occupation from 1598 to 1821, followed by Mexican and then U.S. rule. The Navajo were driven from their homeland in 1863 by U.S. troops (led by Colonel Christopher "Kit" Carson), and many Indians were held captive at Ft. Sumner, New Mexico. On June 1, 1868, the Navajo Reservation was established under U.S. treaty. One year later, the Federal Government issued 30,000 sheep and 2,000 goats to the Navajos in the hope of bolstering their economy.

More than a century later, the Navajo Nation is one of the most advanced Indian tribes. They have gone into business on a large scale, producing lumber and operating saw mills, establishing shopping and craft centers, engaging in banking, and leasing vast tracts of oil, gas, coal, helium, and uranium producing lands. Paved roads criss-cross the land, and the people have schools and hospitals.

Under the white man's influence, the Navajo people have in many ways developed a society patterned after the rest of the United States. The

hardships of the early Navajo's existence, in balance with and close to nature, have been generally altered. While most of her people continue to cling to the traditional ties with their culture, the Navajo Nation is now faced with a multitude of "modern" social, technological, and environmental challenges. Grazing, logging, mining, irrigation, and industrial development are increasingly important to the Navajo Tribe. But these and other activities are rapidly sapping the Navajo's vast natural resource heritage. Where bear once filled the forests and eagles the sky, it is sadly ironic that, today, even the American Indian must act quickly to insure the survival of his native fish and wildlife.

The importance of wild game to the Navajo was recognized in the creation of the Navajo Reservation, when it was stipulated that Indians could leave the Reservation to hunt big game (implying that, as early as 1868, there was not sufficient game to meet their needs). In 1880, an estimated 5 percent of Indian subsistence was obtained from hunting (exclusive of buckskin, used for moccasins and clothing). Following complaints of depletion in surrounding States, Indians were prohibited from hunting outside the Reservation around 1900, and their attention was then concentrated on game remaining on Navajo lands. The antelope was soon exterminated, and deer reduced to an insignificant remnant by both heavy hunting and loss of vital habitat from over-grazing and accompanying soil erosion.

Through conscientious management, many big game species have since

been restored to portions of Navajo territory. Moreover, the Tribe is active in many other aspects of land and wildlife management—controlling predators, managing timber and livestock, and even protecting rare and Endangered species.

Established in 1956, the Fish and Wildlife Branch of the Navajo Department of Natural Resources was primarily concerned in its early years with protecting family flocks of sheep and goats from predatory animals. Freeman Taber—a U.S. Fish and Wildlife Service employee—came to the Reservation in 1958 (under a cooperative agreement with the Bureau of Indian Affairs, the Service, and the Navajo Nation) to guide the development of an effective animal damage control program for the Tribe and eventually the establishment of sound wildlife and fishery stocking and management programs. Since that time, the Navajo's interest in and commitment to wildlife conservation have grown considerably.

The Navajo Nation recently became the first Indian Tribe to enact legislation to protect its native Endangered species. In November 1977, the Tribal Council passed a comprehensive Navajo Endangered Species Act—a measure providing for both direct and inter-agency protection of all species listed as "Endangered" on the Navajo Reservation, including federally-listed species.

Under the Navajo wildlife code, the taking, transportation, sale, export, or harassment of all Endangered wildlife is now prohibited on the Reservation (although specimens may be

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Navajo Ken Foster displays a preserved mountain lion (*Felis concolor*) specimen. Although believed on the decline, the status of this species remains undetermined on the Reservation.

transported through the Navajo Nation without restriction under State and Federal permits). Any violators may be subject to imprisonment for up to 150 days, or fined as much as \$500. No exceptions are provided for ceremonial or scientific purposes beyond those provided under Federal law. (Indians can now receive bald eagle feathers under permit from the Service's feather depository in Pocatello, Idaho.)

The new law calls for the development of a list of indigenous species and subspecies determined to be endangered within the Navajo Nation on the basis of criteria paralleling those used for a finding of endangerment under the Federal Endangered Species Act. The Fish and Wildlife Branch is now finalizing its proposed list of En-

dangered species for presentation to the Tribe's Resources Committee.

Empowered by the Tribal Council with regulatory authority in all natural resource matters, the Resources Committee should act on the branch recommendations this summer. Once approved, the official list will be reviewed every two years, with the Fish and Wildlife Branch recommending additions or deletions in accord with current biological data.

The branch is also seeking two major modifications of the protective legislation, making it applicable to Endangered plants as well as animals and also providing for the protection of structural and non-structural improvements for fish and wildlife, which will, to a degree, authorize the protection of essential habitat. (Habitat pro-

tection is not otherwise provided for, although the Tribal Council's Advisory Committee has regulatory authority to withdraw fish and wildlife management areas for protection purposes.)

Bald Eagle Censusing

Under the direction of Ed Olsen, Jr. ("loaned" by the U.S. Fish and Wildlife Service in 1968 to succeed Taber as head of Navajo Fish and Wildlife), biologists within the branch's Technical Section are already developing conservation plans for the bald eagle (*Haliaeetus leucocephalus*) and four other Navajo species protected under the Federal Endangered Species Act. Early in April, they conducted their third bald eagle and general raptor survey—part of a cooperative effort to inventory both the numbers and distribution of wintering eagles in the States of Arizona and New Mexico to ensure adequate habitat protection. (All of this work had to be accomplished with fixed-wing aircraft and helicopter—an expensive operation.)

Bald eagles have been observed wintering along the San Juan River from November through March. (None were sighted during the April survey, indicating their apparent migration from the San Juan River during March.) Sporadic reports of adult birds on the Reservation in the spring, summer, and fall have been received, but the occurrence of a breeding bald eagle population on Navajo land has not been verified. Mike Coffey, who coordinates the section's survey effort, has mapped sightings of raptors on the "Navajo side" of the San Juan, where a total of 36 bald eagles were observed near the river this past winter. Long-range plans call for the capture and radio-tagging of several bald eagles to determine their migration patterns.

There is evidence of increasing concern for eagles on the Reservation, according to John Antonio, the section's chief biologist. Last year, golden eagle (*Aquila chrysaetos*) chicks were turned in to the branch for care on two separate occasions. (One was returned to its nest, and the other sent to a rehabilitation center, with its release expected this summer.)

Peregrine Work

This June and July, the Navajo Nation is cooperating with Interior's Fish and Wildlife Service and Bureau of Land Management, in a joint, Forest Service-administered survey and habitat evaluation effort designed to learn the distribution and production of the Endangered peregrine falcon (*Falco peregrinus anatum*) in Arizona. (The

photo by Dona K. Firminley

entire State could not be censused without the Tribe's active participation.) Data derived from these collaborative studies should tell Navajo biologists whether the peregrine is a resident species, a seasonal user, or only a migrant on the Reservation. (Reports have already been received of historical eyries near Shiprock.) Biologists will also conduct habitat analyses to determine the feasibility of re-introduction to suitable nesting areas. (The branch expects to cooperate and exchange data on both the peregrine and eagle with State and Federal agencies, as well as with Service-appointed recovery teams in the hope of guiding future land-use/management activities that may affect habitat areas.

Ferrets

The Navajo Reservation may contain one of the last active territories in the Southwest for the Endangered black-footed ferret (*Mustela nigripes*), an extremely rare mustelid feared close to extinction. Under a cooperative program with the Fish and Wildlife Service, New Mexico recently trained special dogs to "sniff out" ferrets in prairie dog towns, and the Tribe and New Mexico Fish and Game are now negotiating cooperative use of the dogs to learn if ferrets remain on Navajo land. (Trenching has recently been detected in a dog town near Shiprock—considered by many experts as the prime potential area for ferrets if indeed they survive.)

Under contract to the Service, Richard Kontz conducted a search for the ferret on Navajo land during 1973-1974, spotlighting for ferrets in the Shiprock and Fort Defiance areas (where the most recent signs and most reliable interviews were obtained.) Trenching, plugged burrows, and scats were located and—in June 1974—a ferret was seen near Sanostee. According to Kontz, "It still looks as if the presence of ferrets on the Navajo (territory) is a reality." He estimated two full years would be required to survey prairie dog towns throughout the Reservation and obtain interviews in suspected habitat areas. But thorough survey work could not be supported due to lack of funds and manpower.

Biologists, enforcement officers, and Navajo trappers are now attempting to monitor prairie dog towns scheduled for poisoning, for trenching and other signs of ferret activity. The Tribe is also preparing leaflets and radio spots in the hope of educating the public on the appearance and habits of ferrets. (Medicine men have been known to use ferrets for ceremonial purposes.) Should a population be found, the

area would be protected and proposed to the Service for designation as Critical Habitat.

Fishes

Two Endangered species of fish are believed to occur within Navajo waters: the Colorado River squawfish (*Ptychocheilus lucius*) and the humpback chub (*Gila cypha*). Another, the razorback sucker (*Xyrauchen texanus*), has been proposed for Federal protection.

Unfortunately, the Navajo Fish and Wildlife Branch cannot yet afford the services of its own fisheries biologist, so needed surveys have not been accomplished. (The Service's Division of Fisheries Assistance has a biologist at Gallup who provides technical assistance to the Tribe in fisheries management and other areas.) Some authorities feel that the existence of all three species within the Reservation is questionable (although a Colorado squawfish was taken from the San Juan in 1978). Intensive field studies of the San Juan and Colorado Rivers are needed to verify the existence of the fishes, to determine their population size and distribution, and to learn their biological requirements and apparent limiting factors.

Environmentalists and others are concerned that water depletions resulting from the proposed Navajo Indian and Gallup Water Supply Project—slated to tap more than 1,000,000 acre/feet of water from the San Juan River—will pose a significant threat to the fish as well as eagles and other species dependent upon the river environment. Several law suits have resulted, and Interior's Bureau of Reclamation recently agreed to consult with the Fish and Wildlife Service on the effects of the proposed water manipulation program. The Service has already addressed the terrestrial impacts of the Navajo Indian Irrigation Project on the black-footed ferret which may inhabit the affected area (as well as on a plant proposed for Federal list-

ing within the proposed irrigation district), and has issued a finding of "no jeopardy."

In addition to the listed species on the Reservation, the blue-black silverpot butterfly (*Speyeria nokomis nigrocaerulea*) and the Mesa verde cactus (*Sclerocactus mesaeverdae*), occurring near Shiprock, have been respectively proposed for Threatened and Endangered classification. Critical Habitat has also been proposed for the butterfly, now restricted to isolated seeps and springs near the Arizona/New Mexico border where it feeds (in larval form) on violets.

Bobcat

The active involvement of the Navajo Nation in wildlife management was brought clearly to the attention of wildlife authorities in Washington more than a year ago, with regard to the monitoring of trade in bobcat and other U.S. species protected under the Convention on International Trade in Endangered Species of Wild Fauna and Flora—an international treaty ratified by 51 countries. Under Executive order, the Endangered Species Scientific Authority (ESSA)—acting as U.S. Scientific Authority for the Convention—is required to review available data on the status of all native species protected under the treaty's appendices to insure that export will not prove detrimental to their survival in the wild.

Following the receipt of a favorable determination from ESSA, the Service's Wildlife Permit Office (serving as the U.S. Management Authority for the Convention) was able to authorize controlled export of this Appendix II species from the Navajo Nation along with most of the 50 States.

Navajo biologists are monitoring the taking of bobcat within their territory in compliance with Convention requirements. Currently, there are about 15 commercial trappers taking bobcats along with animal damage control specialists who will take bobcat strictly on a complaint basis. (Hides may then be sold for up to \$400 a pelt, with compensation going back to the trapper.) Of the 126 bobcats reported taken during the 1978-79 season, 85 were captured by commercial trappers (and 62 of these were tagged).

In the early 1960's, biologists reported that the bobcat was apparently on the increase on Navajo land. But with heavy trapping pressure, harvest figures now indicate a possible decline in numbers. The Tribe plans to launch comprehensive studies of bobcat within the Reservation to determine its status, distribution, habitat use, sex and age ratios, and productivity/re-

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Upper surface of a female blue-black silverspot butterfly.

Fish and Wildlife Service photo

cruitment. Together with harvest data, they hope that the optimum sustainable yield may be determined for the species. (Although now considered a harvestable species, Navajo biologists believe careful management will be necessary to insure the bobcat's long-term preservation.)

Bighorns

Portions of Navajo territory are within the historic range of the desert bighorn sheep (*Ovis canadensis nelsonii*), with early records indicating they were fairly numerous in the mountains and badlands until the 1860's. There had been no confirmed reports of the species in recent years until this February, when one was rumored shot in a canyon near the mouth of the Little Colorado River.

Tribe biologists set out this spring in the hope of finding a surviving band, and have verified the shooting. Observers will camp near waterholes this summer during periods of drought, and will look again for tracks in the winter snow. If sheep are found, researchers hope to radio-track several rams to determine the size and distribution of any resident population, and will attempt to protect habitat areas.

Navajo Nation biologist Mike Walker hopes that hoof tracks like these, found on upper ledges of canyons near the Colorado River, are those of the elusive bighorn sheep.



If none are located, the Tribe plans to work with Utah Fish and Game personnel who have expressed an interest in supplying bighorns along the Navajo (southernmost) side of the Colorado River. Biologists are in the process of studying potential transplant locations, which should be free of wild burros and domestic livestock, to determine how many sheep available vegetation would support.

Bear

Although once present on the Reservation, grizzly bears (*Ursus arctos horribilis*) vanished from Navajo land around 1928, when the last specimen was taken. (Two other listed species on the Reservation also disappeared around this period: the jaguar (*Panthera onca*), last observed during World War I, and the wolf (*Canis lupus*), last reported in 1920.) Because of their size and ferocity, the grizzlies were held in awe by the Navajo, who knew them as "frosty-faced bears."

Ken Foster, a Navajo who has worked with the Tribe's predator control program for 20 years, says that "a majority of the Navajo worship bear, as they thought they were people at one time." According to Navajo Indian

legend, there was once a beautiful Indian maiden who took a coyote for her husband. When he begged to go hunting with her 12 bothers, they killed him in revenge. The maiden went in search of her husband for four nights in four directions of the earth, carrying fangs and claws made from bone needles (and becoming hairy all over). She then killed all her brothers except the youngest, who escaped and shot an arrow into the bush where the "Bear Maiden's" life was hidden. The gods revived and sentenced her to be cast forever among the creatures who forage for their food, decreeing that bear shall be used as food only in times of famine, and that this animal—once a lovely maiden and sister—shall be taken only in a ceremonious way.

Bear are protected on the Reservation, and taken only for damage control purposes. Ken remembers that bear depredations were a problem until about 1968, when complaints began to dwindle. The effects of predator control on the Navajo bear population have never been monitored, and the Fish and Wildlife Branch is designing a study to determine the impacts of taking, timber harvesting, strip mining, recreational uses, and other potentially adverse activities on the bear's numbers. Black bears (*Euarctos americanus ambylceps*) are still found along the Carrizo-Lukachukai-Chuska mountain chain, but may be on the decline. Little is known about their ecology on the Reservation, and biologists want to radio-track several over the next couple of years to collect data on their seasonal movements, food and habitat needs, population characteristics, and mortality factors to develop management recommendations.

Interagency Cooperation

In addition to caring for native species through direct protection and management, an important objective of Navajo Fish and Wildlife is the development of an advisory network with Federal agencies and adjoining States to encourage integrated land management planning. The branch hopes to negotiate cooperative agreements with the concerned State and Federal agencies and will strive to keep Interior's Bureau of Indian Affairs and Navajo Nation administrators advised of the current status and needs of protected species.

To meet this goal, the branch is preparing guidelines to promote consideration of endangered and other wildlife needs during early planning for timber, range/grazing, mining, transportation, water development/irrigation, agricultural, and recreational activities.

photo by Dona K. Finnley

Authority differs, however, under the Service's Fishery Resources Program (formerly "coastal anadromous") under which American Indians in the State of Washington are receiving Federal funds for fish rearing and release and catch monitoring (in compliance with the Boldt decision). The Nisqually, Quinault, Hoh, and Squaxin Island Tribes, as well as the Northwest Indian Fish Commission, are to receive around \$200,000 during FY 1979 and 1980 from the Service, to be matched by the recipients on a 50/50 basis (primarily with BIA funds available under the Indian Self-determination Act).

Indian tribes are considered sovereign governing entities under other environmental laws, such as the Clean Air Act Amendments of 1977 and the Surface Mining Control and Reclamation Act of 1977 (through which tribes receive 50 percent of mine operation revenues to reclaim abandoned mines on their lands—perhaps promising precedents).

Section 7 of the Federal Endangered Species Act calls upon all Federal agencies to "... utilize their authorities in furtherance of the purposes of this act by carrying out programs for the conservation of endangered and threatened species." Under this mandate, the Navajo Tribe remains hopeful that BIA can make more dollars available to strengthen DNR's endangered species management role on the Reservation. (For FY 1979, the agency allocated about \$50,000 to Navajo fish and wildlife programs.)

"In many ways, the Navajo Nation is in a real jam in terms of habitat deterioration," Olsen believes, "but the Tribe is willing to deal with the problem, and I think they can do it best internally." So far, Olsen says they are making progress, but it's been a costly, uphill battle. "I guess what they want most is to be treated at least the way the government treats other State agencies, especially in fish and wildlife, so that they can get the job done."

Like an eagle without feathers, the Navajo Nation's endangered species program will never get off the ground without sufficient funding. Branch biologists are just now learning the magnitude of the task ahead, and it will take time and money to census peregrines and eagles, to search for the elusive ferret, to sample for Endangered fish, and to study other species like the mountain lion (*Felis concolor*), whose status remains unknown.

"While we don't have the money to support comprehensive programs," biologist Antonio says "we must do what we can with the funds now available. We only hope we haven't waited too long."

Having conceptualized a rather ambitious conservation program, Olsen and Fish and Wildlife staffers are anxious to round out their management plans for endangered and nongame species. But funding is scarce, and costs escalating.

As with most State fish and game agencies, most of the funding for the Tribe's wildlife programs has come from hunting and fishing licensing. For Fiscal Year 1979, the Department of Natural Resources is operating on a budget approaching \$3.5 million, from which it administers four major programs: Fish and Wildlife, Forest Management, Range Resources, and Parks and Recreation Management. Of this amount, a little more than \$500,000 is allocated for fish and wildlife programs (with almost half expended for animal damage control) in an attempt to minimize livestock losses—a mammoth task, with more than 15 million acres now grazed).

Within the Fish and Wildlife Branch monies are also channeled into enforcement activities (the branch employs four conservation officers, with two trained and authorized as Federal Game Wardens). Community cat and dog control, another arm of the branch, works to manage stray, wild, and diseased dogs (estimated in 1977 at 100,000) and cats, with assistance from BIA and (in previous years) the Public Health Service. The remainder of the Branch's budget is allocated for wildlife management, coordinated by the Technical Section's three staff biologists (with assistance from consultants and summer interns).

While in strong support of the Tribe's conservation efforts, the Fish and Wildlife Service is constrained under existing law from assisting the Navajo Indians through the Endangered Species Grant-in-Aid Program. (Section 6 of the Endangered Species Act of 1973 provides for two-thirds matching fund assistance to States and territories of the U.S. with active conservation programs and authority to manage and protect their resident Endangered or Threatened species. See related story on page 1.) As a result, the Service contribution has been limited (through support of Ed Olsen and his operating expenses) to about 5 percent of the entire branch budget.

Indian tribes have also been excluded from funding authorization under the Service-administered Fish and Wildlife Restoration ("P-R/D-J") Programs, under which three-fourths Federal matching funds are apportioned to the 50 States based on hunting and fishing license sales and the State's



photo by Dona K. Finney

Some biologists believe the Colorado River several miles below Glen Canyon Dam may still support Colorado River squawfish. Upper canyon ledges are prime potential habitat for bighorn sheep.

The Bureau of Indian Affairs (BIA) has traditionally held trust responsibility for Navajo natural resources. Calling for the development of a comprehensive Navajo endangered species program, Department of Natural Resources (DNR) director Roger C. Davis asked in 1977 for BIA assistance in implementing a long-range conservation plan that insures balanced resource planning. "I feel that it is of prime importance to develop the technical capability in wildlife management at the agency level where wildlife, range, forest, parks and other technical personnel could plan together in the development and protection of our natural resources."

The Bureau has been cooperating with the U.S. Fish and Wildlife Service and Federal land management agencies to insure that its programs are compatible with endangered species needs, as required of all Federal agencies under Section 7 of the Endangered Species Act. (Representatives of BIA were present at a 1977 Service workshop designed to guide agency compliance with President Carter's request that Federal agencies expedite the protection of Critical Habitat for Endangered and Threatened species on lands they own or manage.)

Continued from page 6

gered and Threatened Wildlife and Plants (F.R. 5/1/79). The species under review are the yellow-blossom pearly mussel (*Epioblasma* (= *Dysnomia*) *florentina florentina*), orange-footed pearly mussel (*Plethobasis cooperianus*), pale lilliput pearly mussel (*Toxolasma cylindrella*), birdwing pearly mussel (*Conradilla caelata*), turgid blossom pearly mussel (*Epioblasma* (= *Dysnomia*) *turgidula*), tan riffle shell mussel (*Epioblasma walkei*), and Cumberland monkeyface pearly mussel (*Quadrula intermedia*).

The seven species occur in portions of the Clinch, Duck, Elk, Middle Fork Holston, Paint Rock, Powell, Red, and Tennessee Rivers in Alabama, Kentucky, Tennessee, and Virginia. The Service is soliciting views and information from the Governors of those States on the status of the molluscs within their jurisdictions. Other interested parties are invited to submit any factual information, especially publications and written reports regarding the species in question.

All of the species (except the tan riffle shell mussel) were listed in a final rulemaking (F.R. 6/14/76) which determined 159 species protected under Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora to be Endangered. The tan riffle shell was listed the following year (F.R. 8/23/77). Protection was warranted for all species because habitat destruction has resulted in a serious decline in their population numbers.

The listing of the seven molluscs was recently challenged in a suit brought by proponents of the Tennessee Valley Authority's (TVA) Columbia Dam project. The dam, to be situated on the Duck River in Tennessee, would jeopardize the existence

of some of these species, according to a biological opinion issued by the Service's Director on February 16, 1977. The suit asked for a judgment that the Interior Department (under the National Environmental Policy Act) is required to prepare an Environmental Impact Statement (EIS) on the listing of Endangered molluscs in the Duck River.

U.S. District Court Judge L. Clure Morton dismissed the case saying, "The urgency (of protecting endangered wildlife) is declared by Congress. This court, the Secretary, and others cannot add to or subtract from the procedures set out in (the Endangered Species Act)." Information presented in this case resulted in

petitions from Representative Robin Beard (R-TN) to review the status of the seven molluscs.

Consultation between the Service and TVA involving the birdwing pearly mussel, turgid blossom pearly mussel, tan riffle shell pearly mussel, Cumberland monkey-face pearly mussel, and pale lilliput pearly mussel has been postponed until TVA furnishes the Service with the results of surveys they are conducting on the Duck, Clinch, and Powell Rivers to determine the status of these mussels. Thus far, surveys have turned up a second population of the birdwing pearly mussel and specimens of the Cumberland monkeyface pearly mussel in the Duck River.

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	33	227	260	3	18	21
Birds	67	144	211	3		3
Reptiles	11	48	59	10		10
Amphibians	5	9	14	2		2
Fishes	29	11	40	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	21		21	2		2
Total	198	442	640	39	18	57

Number of species currently proposed: 158 animals
1,850 plants (approx.)

Number of Critical Habitats listed: 34

Number of Recovery Teams appointed: 66

Number of Recovery Plans approved: 22

Number of Cooperative Agreements signed with States: 23

May 31, 1979



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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The American alligator in Louisiana is currently Endangered in Area 1, Threatened in Area 2, Threatened by Similarity of Appearance in Areas 3 and 4.

Area 4 consists of 9 parishes which were recently reclassified from Threatened to less restrictive category, Threatened by Similarity of Appearance.

The American alligator (*Alligator mississippiensis*) has been reclassified under the Endangered Species Act of 1973 in nine Louisiana parishes (F.R. 6/25/79). These alligators, previously classified as Threatened, have been reclassified to the less restrictive status under the Act, Threatened by Similarity of Appearance. The parishes affected by the final rulemaking are as follows: Iberia, St. Mary, Terrebonne, Lafourche, St. Charles, Jefferson, Plaquemines, St. Bernard, and St. Tammany.

This action increases from 3 to 12 the number of parishes from which alligators may be lawfully taken under controlled harvest. Controlled taking in accordance with Louisiana State law has been allowed in three additional parishes; Cameron, Calcasieu, and Vermillion, where the species is also classified as Threatened by Similarity of Appearance.

Reclassification to the less restrictive category indicates that the alligator is no longer likely to become

Continued on page 3

photo by Steve Hillebrand

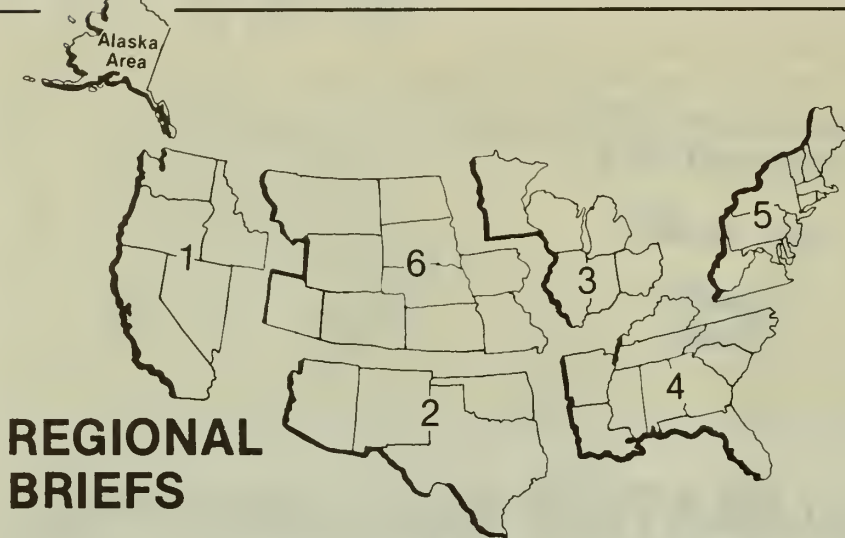


Three of four peregrine chicks are held in a cardboard box before placement in a man-made nest on the Interior Building roof.

See Story page 6

WOLF SKULL
FOUND
IN WISCONSIN

An expert on wolves in the Office of Endangered Species recently identified the skull of an animal, shot and killed in Douglas County, Wisconsin in June, as that of an adult gray wolf (*Canis lupus*). This finding confirms earlier track and sight records kept by the Wisconsin State Office of Endangered and Nongame Species which indicate the presence of two packs in Douglas County (see April 1979 BULLETIN). The recently found skull, probably that of a female, is the first confirmed specimen from Wisconsin in 20 years.



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of June.

Region 1. A female Marianas mallard (*Anas oustaleti*) captured on Saipan, will be placed with a male captured earlier in the Marianas. It has been suggested that less than 10 individuals

of this species exist in the world. The pair will be housed at the Cooperative State Nene Propagation Station at Pohakuloa, Hawaii.

Service consultations on the Santa Ana River flood control project near Huntington Beach have resulted in a newly excavated 17-acre site stocked

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U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Alaska Area:** Alaska.

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with mosquito fish for feeding a California least tern (*Sterna albitrons browni*) colony. The success of the project will depend upon the movement of marine fish through canals (which connect the temporary marsh to natural waters) to maintain fish populations in the marsh. The site is owned by the California Department of Transportation which is leasing it to the county on the condition that it will be returned upon completion of the flood control project.

Region 2. The Service met with wildlife officials from Texas, Arkansas, and Oklahoma to discuss bobcat (*Lynx rufus*) problems—standardization of tagging, illegal entry from Mexico, import and export, and interstate handling and shipment.

The Arizona-New Mexico Endangered Species Handbook has been printed and released. Contact the Regional Office for details on availability.

More than 50,000 Kemp's Ridley sea turtles (*Lepidochelys kempii*) were hatched at Rancho Nuevo in Mexico. Two female Kemp's Ridley sea turtles are reported to be nesting at Padre Island, Texas. A report on the second year of this 10-year project to protect the species will be forthcoming in December.

Region 3. Our Service met with the Soil Conservation Service to discuss procedures for Section 7 consultations.

The Service also met with the Minnesota Land Heritage Program of the Department of Natural Resources to discuss interaction between the two agencies.

The Kirtland's Warbler Recovery Team met in June.

Region 4. Service and State personnel are continuing their efforts to improve the nesting success of loggerhead sea turtles (*Caretta caretta*) on Cape Island, Cape Romain National Wildlife Refuge, South Carolina. Loggerheads on the island, which is considered one of the most important nesting beaches for the species, have been suffering from raccoon predation (see May 1979 BULLETIN) and, during the last 10 to 12 months, serious beach erosion. The cause of the accelerated erosion is uncertain, but it has resulted in near elimination of nesting beach in some areas. Because of the high erosion rate, many nests are subject to being washed away before the eggs can hatch.

Service personnel plan to transplant about 500 nests to an area safe from erosion and provide them with a wire cover to protect them from raccoons as well. About 300 nests have been moved so far.

Region 5. (See Pittston story on page 3.)

PITSTON PROCEEDINGS HALTED AGAIN

As this issue of the BULLETIN went to press, the Secretaries of the Interior and Commerce and the Pittston Company reached an agreement to stay the proceedings of the first Endangered Species Review Board. The proceedings will not be resumed until the Environmental Protection Agency's (EPA) internal appeals process reaches a final decision on a permit for Pittston's proposed oil refinery at Eastport, Maine, or until a Federal judge decides that the company's application for an exemption from Section 7 of the Endangered Species Act is not premature.

Pittston was denied a National Pollutant Discharge Elimination System permit by EPA after the Fish and Wildlife Service and National Marine Fisheries Service issued biological opinions to EPA stating that the facility would likely jeopardize the continued existence of the bald eagle (*Haliaeetus leucocephalus*) and right and humpback whales (*Eubalaena* spp. and (*Megaptera novaeangliae*)).

The Pittston Company originally applied to the Secretary of the Interior for an exemption on January 26, 1979, but action was suspended while our Service and EPA renewed the con-

sultation, to consider additional information (see March 1979 BULLETIN). However, the new consultation resulted in the Service reaffirming its earlier conclusion of jeopardy to the eagle.

The Review Board resumed processing of the Pittston application on June 4, 1979. Four environmental organizations then brought suit, contending that the Review Board's action was

premature, since Pittston had not yet exhausted EPA's internal appeals procedure. This led to the present agreement to again halt the Review Board's action. Unless a subsequent hearing indicates that the Review Board should proceed, no further action will be taken on the exemption application until EPA's proceedings are completed, which may take several months.

CITES Standing Committee Report

The Standing Committee of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) met on June 22 in Bonn, West Germany. The Committee, formed at the recent conference of all party nations in Costa Rica, is chaired by the United States and also consists of representatives from the United Kingdom, Switzerland, India, Nepal, Zaire, Costa Rica, Australia, and Brazil. Its duties are to provide guidance to the CITES Secretariat (the full-time staff), to prepare for the next conference of the parties in 1981 and

to oversee the functioning of various committees which will conduct certain studies to be presented to that conference.

Major issues discussed at the meeting included:

- Relative merits of negotiating a more favorable tax status for the Secretariat with the Swiss Government or moving to a less expensive location such as England. Both options will be further explored.

- The need for obtaining party nation participation in committees to

Continued on page 8

Alligators Reclassified

Continued from page 1

endangered in the foreseeable future, and that no harm will be done to the species by controlled harvest in those areas where it is so classified. However, other Southeastern alligator populations remain classified either as Endangered or Threatened. For instance, alligators in the remaining Louisiana coastal parishes, and those in the State's inland parishes, remain classified as Threatened and Endangered, respectively.

Since individuals from the three listed alligator populations are indistinguishable, some restrictions on commercial activities involving specimens taken from the 12 parishes are still necessary. Management procedures developed by the State of Louisiana assist law enforcement in relieving look-alike problems which pose an additional threat to the species. (See 44 F.R. 31586-31587, May 31, 1979, for a discussion of the Louisiana State alligator regulations.)

The Service received a total of 23 written comments on the proposal, most of which were in favor of reclassification in all or a part of the proposed area. The Governor of Louisiana, while strongly supporting the

reclassification in the nine parishes as proposed, requested that the Service reconsider its position on the other parishes requesting delisting. Policy Juries of several parishes not included in the affected nine individually requested delisting in their areas. The Defenders of Wildlife and the Fund for Animals submitted joint comments opposing the reclassification on the grounds of inadequate enforceability and the potential harm to endangered crocodilians throughout the world should alligator hides enter the commercial market. None of the commentors offered additional biological data. Comments submitted during the reopened comment period, May 10-June 5, 1979, were also considered in the final decision to reclassify alligators in the nine parishes.

In partial fulfillment of the Endangered Species Act Amendments of 1978, public hearings on the proposed reclassification were held at Morgan City, Louisiana and Tallahassee, Florida. The hearings were attended by approximately 200 persons and 15 persons, respectively. None present at either meeting voiced opposition to the proposal, most spoke in favor of

it, and many recommended reclassification in additional parishes. No additional biological data were presented, however.

Simultaneously, with the Service's proposal to reclassify alligators in the above nine parishes (F.R. 10/2/78), the Service also proposed to amend the special rules which apply to American alligators and published a notice of review on the status of the alligator in all other parishes within Louisiana. After careful review of the comments on the proposed special rules by the Service's Division of Law Enforcement, the Service decided to repropose special rules for the American alligator. These proposed rules were published in the *Federal Register* on July 18, 1979.

The Service will continue to review the status of the American alligator throughout the State of Louisiana. Biological evidence, however, does not support reclassification of alligators in additional parishes at this time. Should alligator numbers increase significantly, becoming a serious nuisance or exceeding the carrying capacity of their habitat, appropriate measures can then be implemented.

ENDANGERED SPECIES SCIENTIFIC AUTHORITY

Notices—June 1979

Composed of representatives from seven Federal agencies, the Endangered Species Scientific Authority (ESSA) was established by Executive order to insure the scientific soundness of governmental decisions concerning trade in endangered species of animals and plants. As the U.S. Scientific Authority for the Convention on International Trade in Endangered Species of Wild Fauna and Flora, ESSA reviews applications to export and import species protected under the Convention, reviews the status of wild animals and plants impacted by trade, monitors their trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

ESSA Proposes Limited Export of American Ginseng

State-by-State export findings on American ginseng (*Panax quinquefolius*) roots harvested in 1979 were proposed in early June by the Endangered Species Scientific Authority (F.R. 6/1/79). Export was proposed for approval from two States, Kentucky and Wisconsin.

Because wild plant management is new to many States, State management authorities for plants are often lacking. The ESSA, therefore, proposed to approve export of wild American ginseng from those States that have implemented substantial programs to conserve the species and whose populations can support the harvest. Acceptable conservation programs generally must include some form of research and regulation designed to monitor the status of the State's wild populations, to provide annual harvest estimates, and to control exploitation.

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and its implementing regulations control trade

in animal and plant species included in any of three appendices. American ginseng is included in Appendix II, a listing which generally includes those species not necessarily threatened with extinction, but which may become so unless trade is subject to strict regulation. The ESSA's approval of ginseng export from any State indicates that such an action will not be detrimental to the survival of the species. Such a determination must be made in order to allow the U.S. Management Authority to issue a permit for trade in the species.

Kentucky, West Virginia, and Wisconsin exported the greatest amounts of ginseng roots between September 1, 1978, and April 15, 1979. Statistics compiled from export certificates by the Management Authority indicate that these three States exported 14,103, 11,132, and 7,363 pounds, respectively. Other States approved for export of ginseng roots harvested in 1978 were:

Arkansas, Georgia, Illinois, Indiana, Iowa, Maryland, Michigan, Minnesota, Missouri, New York, North Carolina, Pennsylvania, Tennessee, and Virginia. Conditions for export on these findings required that the roots be documented as to the State of origin and season of collecting (Annex to 50 CFR Part 810). Conditions on the findings for export of roots harvested during the 1979 season were also proposed by the ESSA along with the June 1 proposed findings. These conditions again require that the roots be documented as to State of origin and season of collecting. The proposal additionally requires that methods and procedures to be followed by the Management Authority to ensure compliance with this condition must be provided to the ESSA on a State-by-State basis prior to final findings addressing American ginseng.

CITES certificates are required for the export of cultivated American ginseng, but no CITES documentation is required for harvest, transport, or sale of wild or cultivated ginseng within the United States. Harvest of wild American ginseng from public lands, however, usually requires written permission from the administering agency, and harvest transport, and commerce in this species are subject to control in some States.

Interim Exemption Regulations Adopted

The Endangered Species Committee has adopted interim regulations for the operation of Endangered Species Review Boards and Committee proceedings (F.R. 6/8/79). The new regulations implement Sections 7(g)(4)-(12), 7(e), and 7(h)-(1) of the Endangered Species Act Amendments of 1978. Together, these sections provide that Federal projects meeting certain criteria may be exempted from the provisions of Section 7(a), which establishes the basic requirement that all Federal agencies insure, in consultation with the Secretaries of the Interior or Commerce, that their actions do not jeopardize the continued existence of Endangered or Threatened species or destroy or adversely modify their Critical Habitats.

The regulations took immediate effect, so that a Review Board could begin consideration of exemption applications filed for the Pittston Oil refinery in Maine (see Pittston story page 3). The interim regulations will remain in effect for 240 days, with permanent regulations to be published before their expiration.

Applications for exemption from the Act may be submitted by a Federal agency if consultation between the agency and Interior's Fish and Wildlife Service or Commerce's National Marine Fisheries Service has resulted in a biological opinion from either Service indicating jeopardy to a listed species, or destruction or adverse modification of Critical Habitat. The Governor of the State where the action is proposed, or a person denied a permit or license primarily because of Endangered species considerations (such as the Pittston Company), may also apply for an exemption. Application procedures are established in separate regulations proposed by Interior and Commerce (F.R. 2/7/79; see February 1978 BULLETIN).

Once an application has been submitted, a three-member Review Board is appointed. Within 60 days after appointment, the Review Board must determine whether the application meets the threshold criteria for referral to the Committee. By regulation, the Review Board must decide whether (1) the affected Federal agency has conducted any required biological assessment; (2) the Federal agency (and permit or license applicant, if any) have refrained from any irreversible or irretrievable commitment of resources; (3) the Federal agency (and permit or

license applicant) have consulted with the appropriate Service in good faith and have considered any reasonable and prudent alternatives; and (4) the findings of an irresolvable conflict between the proposed action and the species is supported by substantial evidence. The regulations place the burden of proof on the exemption applicant.

A negative determination on any of the four criteria above will result in termination of the proceedings. The applicant may then attempt to correct any deficiencies in the record and resubmit the application. The applicant may also appeal the decision to a Federal court.

Following a positive determination, the Review Board must prepare a report, within 180 days, addressing the criteria the Committee will use in deciding whether to grant an exemption.

In addition to the Secretary of the Interior, the Committee consists of the Secretaries of Agriculture and the Army, the Chairman of the Council of Economic Advisors, the Administrators of the Environmental Protection Agency and the National Oceanic and Atmospheric Administration, and a nominee from the Governor of each affected State.

The Committee has 90 days to make a final decision. To grant an exemption, at least five of its members, voting in person, must determine on the record that (1) there are no reasonable and prudent alternatives to the proposed action; (2) the benefits of the actions clearly outweigh the benefits of alternative courses of action consistent with conserving the species or its Critical Habitat, and such action is in the public interest; and (3) the action is of regional or national signifi-

cance. The Committee must also establish appropriate mitigation and enhancement measures to minimize the adverse effects of the exempted action on the species.

The regulations require advance notices in the *Federal Register* of all Committee and Review Board meetings or hearings, as well as addresses and deadlines for submission of written comments. Meetings and hearings will be open to the public.

Although the interim regulations took immediate effect, the Committee is soliciting public comments, which will be considered prior to adoption of final regulations. Comments may be submitted through September 4, 1979, to the Chairman, Endangered Species Committee, c/o Office of Policy Analysis, Department of the Interior, 18th and C Streets, N.W., Washington, D.C. 20240.

Rulemaking Actions June 1979

25 FOREIGN SPECIES FOUND ENDANGERED

The Service has determined that 25 foreign species (24 mammals and 1 bird) are Endangered (F.R. 6/25/79). The mammal species were classified as endangered in the 1972 edition of the International Union for the Conservation of Nature and Natural Resources Red Data Book, and are being

recognized as such in a revised edition now in preparation. This final rulemaking became effective on July 27, 1979.

Most of the species have suffered severe population declines because of excessive hunting and loss of habitat. Some, in fact, are thought to be

extinct.

(Space limitations do not permit us to present a discussion of each of the 25 species and the threats to their existence. For further information on any of the species listed in the accompanying table, kindly consult the June 25, 1979, *Federal Register*.)

Species		Range
Common name	Scientific name	Known distribution
Cat, Iriomote	<i>Mayailurus iriomotensis</i>	Iriomote Island, Ryukyu Islands
Civet, Malabar large spotted	<i>Vierra magaspila civetina</i>	India
Deer, Bactrian	<i>Cervus elaphus bactrianus</i>	USSR, Afghanistan
Deer, Barbary	<i>Cervus elaphus barbanus</i>	Tunisia, Algeria, Morocco
Deer, Corsican red	<i>Cervus elaphus corsicanus</i>	Corsica, Sardinia
Deer, Yarkand	<i>Cervus elaphus yarkandensis</i>	Chinese Turkestan
Duiker, Jentinks	<i>Cephalophus jentinki</i>	Liberia, Sierra Leone, Ivory Coast.
Eland, western	<i>Taurotragus derbianus derbianus</i>	Senegal to Ivory Coast
Fox, Simian	<i>Simia simensis</i>	Ethiopia
Gazelle Arabian	<i>Gazella gazella arabica</i>	Arabian Peninsula including Israel.
Gazelle, Pelzein's	<i>Gazella dorcas pelzeini</i>	Somalia
Gazelle, sand	<i>Gazella subgutturosa marica</i>	Arabian Peninsula, Jordan
Gazelle, Saudi	<i>Gazelle dorcas saudiya</i>	Israel, Iraq, Jordan, Syria, Saudi Arabia, Kuwait.
Hartebeest, Swayne's	<i>Alcelaphus bucelaphus swaynei</i>	Somalia, Ethiopia
Hartebeest, Tora	<i>Alcelaphus bucelaphus tora</i>	Ethiopia, Sudan, Egypt
Muntjac, Fea's	<i>Muntiacus feae</i>	Burma, Thailand
Rabbit, Ryukyu	<i>Pentalagus furnesi</i>	Ryukyu Islands
Sika, Formosan	<i>Cervus nippon taiovanus</i>	Taiwan
Sika, North China	<i>Cervus nippon mandarinus</i>	Shansi, China
Sika, Ryukyu	<i>Cervus nippon keramae</i>	Ryukyu Islands
Sika, Shansi	<i>Cervus nippon grassianus</i>	Shansi, China
Sika, South China	<i>Cervus nippon kopschi</i>	Yangtze Valley, China
Suni, Zanzibar	<i>Nesotragus moschatus moschatus</i>	Zanzibar Island, Tanzania
Tahr, Arabian	<i>Hemitragus jayakani</i>	Oman
Parrot, rednecked Amazon	<i>Amazona aurasia</i>	Dominica

Tennessee Purple Coneflower Endangered

A native plant of Tennessee, *Echinacea tennesseensis*, was determined by the Service to be an Endangered species (F.R. 6/6/79). The species was one of approximately 1,700 plant taxa proposed by the Service for Endangered status in the June 16, 1976 *Federal Register*.

The coneflower is found in the Tennessee counties of Davidson, Rutherford, and Wilson. The Davidson population has been reduced because of housing construction. Ongoing residential and recreational development could continue to threaten this population.

Although the coneflower was formerly found on three sites in Rutherford County, only one of these populations exists today—in a corporation's crushed limestone lot. The present

owner is sympathetic to conserving the species.

In Wilson County, the plant is located in a pasture cedar glade, the majority of which is privately owned. A portion of this population occurs in Cedars of Lebanon State Forest.

Collectors and wildflower enthusiasts have been attracted by the species' esthetic qualities. Removal of a large number of plants from Wilson County has been observed. In the 1960's, *Echinacea* roots were being purchased by a crude drug company for their suspected medicinal value. A recurrence of this type of demand could further threaten the species' survival. Other threats to the species could arise from grazing, if it exceeds current levels in Wilson County. Succession of the cedar glade commun-

ities, in which the species occurs, could result in the coneflower being "crowded out" of its habitat.

In addition to the protection provided by the Endangered Species Act, the Service will review the status of the species to determine if it should be proposed for placement on an appropriate Appendix to the Convention on International Trade in Endangered Species of Wild Fauna and Flora, and whether it should be considered under other appropriate international agreements.

Peregrine Falcons Released in Nation's Capital

Soon, through the aid of a hacking station atop the Department of the Interior Building, it may be possible for residents and tourists in Washington, D.C. to witness peregrine falcons (*Falco peregrinus*) soaring overhead. On June 20, Interior Secretary Cecil D. Andrus presided over the placing of four captive-bred peregrine chicks in a man-made nest on the building's roof. After an 18-day stay in the hack box, the 7-week-old birds were released on July 9 at 9:15 a.m. (Interior officials had hoped for a release date of July 4, but the three females developed slower than expected.)

The release program, which came about through recommendations made by the Eastern Peregrine Falcon Recovery Team, marks the first attempt at restocking the peregrine in a major U.S. metropolitan area. According to Dr. Tom Cade of the Peregrine Fund at Cornell University (and supplier of the birds for this project), Washington, D.C., like most large cities, is a biologically sound location for the reintroduction of peregrines. The city offers an ample supply of pigeons and starlings as well as the absence of predators such as great horned owls (*Bubo virginianus*). The falcon has been known to nest on tall buildings in highly populated areas of Europe and North America, including Washington, D.C. and several nearby areas in the 1940's and early 1950's.

Throughout their stay on the Interior Building roof, the peregrines have been under the care of Tom and Sharon Allan of Houghton, Michigan. The couple was given living quarters in the building. Between visits to observation points on nearby rooftops, the Allans were able to monitor the birds via a complex video system. (The video monitoring system is the product



The Tennessee Purple Coneflower has attracted many collectors because of its esthetic qualities.

of Innervision Media Systems, Inc., Rochester, New York. A similar remote monitoring system was used in 1976 for the first bald eagle hacking project by the New York State Endangered Species Unit at Montezuma National Wildlife Refuge. See December 1978 BULLETIN.)

The bird sitting chores included a daily "remote feeding" consisting of 8 or 9 quail. The food was put into a delayed release box above the hack box at approximately 6:30 a.m. Thirty to 60 minutes later a string was pulled and the food fell into the box. This system of feeding was used to avoid any association of the food with humans. There was no feeding the day before the release.

Prior to release, a cardboard panel was inserted in the box between the falcons and the screen at the front of the box. The screen was removed and food was placed on the hack board outside of the box. The cardboard panel was then removed and the birds were on their own. All of the birds

emerged from the box within 10 minutes.

According to the Allans, their work really began during the first week of the release, the most critical period for the success of the project. The Allans worked from dawn to dusk watching the birds as they made their first flights. During the first several weeks of flight, the peregrines exhibited a sequence of behaviors aimed at developing the flying skills necessary for hunting. The birds will continue to return to the hack site for food until they are able to sustain themselves by their own hunting efforts.

As they become more proficient fliers, the birds will increase their hunting radius from the hacking tower. The birds have been fitted with radio transmitters to allow tracking of their activities for the first few weeks. Also, walkie-talkies and the video monitoring system (which covers a 355° area) will aid in keeping track of the birds.

It is believed that the birds will eventually choose a taller structure in the

Washington area on which to establish a territory and, hopefully, to rear their young. Speculation as to which buildings may be chosen by the falcons includes the U.S. Capitol, the old Smithsonian, the old Post Office, and the National Cathedral.

Currently, there are no wild breeding peregrines east of the Rocky Mountains. Since the late 1940's, when DDT was introduced as a pesticide, peregrines experienced a sudden and sharp decline in their population numbers. DDT caused eggshell thinning, which resulted in many eggs being crushed during normal incubation.

Peregrine release projects in non-urban areas are beginning to show signs of success. Three pairs of peregrines were recently spotted near separate release sites in New Jersey. One pair has nested and produced eggs (which unfortunately disappeared through unknown causes just prior to hatching), marking the first time that falcons raised and released in this manner have bred in the wild.

Sharon and Tom Allan on the hacking tower before their bird-sitting chores began. At left is a camera for remote video monitoring of the falcons.

photo by Steve Hillebrand



NEW PUBLICATIONS

The Endangered Species Committee of the American Fisheries Society, with financial support from the Fish and Wildlife Service, has published a pamphlet—*Fishes of North America: Endangered, Threatened, or of Special Concern: 1979*. The pamphlet, which contains 61 color photographs of endangered fish, was written by James E. Deacon, Department of Biological Sciences, University of Nevada, Las Vegas; Gail C. Kobetich, U.S. Fish and Wildlife Service; James D. Williams, U.S. Fish and Wildlife Service; and Salvador Contreras, Professor of Biology, Universidad Autonoma de Nuevo Leon, San Nicolas, Nuevo Leon, Mexico. For each fish listed, common and scientific names, nature of the threat, and historical distribution by State or province are given.

For a free copy write to James D. Williams, Office of Endangered Species, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

The Rare Vascular Plants of Saskatchewan was a Canadian contribution to the UNESCO Program on Man and the Biosphere. For information on this publication's availability write to the Parks, and Wildlife, 10363—108 Street, Edmonton, Alberta, T5J 1J8.

Copies of *Vascular Plants of the Charles Sheldon National Wildlife Refuge, Nevada* (with special reference to possible threatened and endangered species) are now available by

Continued on page 8

work on an identification manual, standardized nomenclature for species included on the three CITES appendices, and other issues. The Secretariat will circulate an official request to all parties asking for their help in this work.

- The usefulness of good communication, and possibly regional meetings, between party nations experiencing problems in interpreting each other's forms and controlling trade in particular items, such as elephant ivory.

- Progress in making arrangements for the next conference of the parties in 1981. India reported that some of the necessary approvals for it to hold the next meeting have been obtained, and the rest are expected soon. The Secretariat will help in preparing a budget for the conference.

- The need for more advance review of proposals to be presented at the conference. The Standing Committee and Secretariat are expected to coordinate this review in order to keep the next conference's agenda to a reasonable length, and to insure that species proposals meet established standards.

New Publications

Continued from page 7

writing to Sheldon National Wildlife Refuge, P.O. Box 111, Lakeview, Oregon 97630.

A *Working Bibliography of the Bald Eagle* is now available from the National Wildlife Federation. Compiled by Dr. Jeffrey Lincer, William Clark, and Maurice N. LeFranc, Jr. of the Federation's Raptor Information Cen-

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	33	251	284	3	18	21
Birds	67	145	212	3		3
Reptiles	11	48	59	10		10
Amphibians	5	9	14	2		2
Fishes	29	11	40	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	22		22	2		2
Total	199	467	666	39	18	57

Number of species currently proposed: 158 animals
1,850 plants (approx.)

Number of Critical Habitats listed: 34
Number of Recovery Teams appointed: 66
Number of Recovery Plans approved: 22
Number of Cooperative Agreements signed with States: 23

June 30, 1979

ter, the bibliography has over 2,000 citations. This comprehensive guide to the literature on the bald eagle serves as companion to the previously published *Working Bibliography of Owls of the World*. (Similar publications on the golden eagle and peregrine falcon are planned.)

To order send name, address, and payment of \$9.00 per copy, plus \$.85 for handling, to National Wildlife Federation, 1412-16th Street, N.W., Washington, D.C. 20036.

An *Illustrated Manual of Proposed Endangered and Threatened Plants of Utah* was prepared by S.L. Welsh and K.H. Throne of the Brigham

Young University Herbarium in Provo, Utah. The project was funded by the U.S. Fish and Wildlife Service, Bureau of Land Management, and U.S. Forest Service. Descriptions of over 200 plants are given.

The manual is available from our Service's Denver Regional Office.

A similar guide has been issued by the University of Oklahoma. *Endangered and Threatened Plants of Oklahoma* is available, while the limited supply lasts, from P.G. Risser, Endangered Species Publication, Department of Botany and Microbiology, University of Oklahoma, Norman, Oklahoma 73019.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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U.S. Fish and Wildlife Service Photo

Current knowledge suggests that the agent that extirpated the brown pelican from Louisiana would have been equally effective regardless of the population size.

Critical Habitat for Three Fishes Reproposed; Withdrawn

A reproposal of Critical Habitat for three fishes in Alabama and Tennessee will be withdrawn by the Service because of procedural errors in the nature of the public meeting and the inadequate availability of information concerning economic considerations. The reproposal was published in the July 27, 1979, *Federal Register*, and the subsequent meetings were held August 28-30. The proposed listing for the spring pygmy sunfish (*Elassoma* sp.) and the pygmy sculpin (*Cottus pygmaeus*) will be automatically withdrawn on November 29, 1979, two years after its initial publication. The proposed listing for the Barrens topminnow (*Fundulus* sp.) will be withdrawn on December 30, 1979, also two years after publication. A new proposal will be made only if new information becomes available.

Recovery Planned for Light-Footed Clapper Rail, Woundfin, Eastern Brown Pelican

The Service approved three recovery plans in July; one for the light-footed clapper rail (*Rallus longirostris levipes*), a California bird Endangered by habitat destruction; one for the woundfin (*Plagiopterus argentissimus*), a minnow with a limited range; and one for the eastern brown pelican (*Pelecanus occidentalis carolinensis*), a coastal breeding bird which suffered a severe population decline in the 1960's.

Light-Footed Clapper Rail

The clapper rail plan calls for the protection of all existing habitat, increasing the carrying capacity and stability of existing habitat, thereby enabling the size of each population to increase, and creating and stocking

new habitat. These activities will aid in achieving the plan's objective of increasing the rail's breeding population to at least 400 pairs.

The light-footed clapper rail occurs in about 16 California marshes. The major reason for the decline in the species has been loss of habitat because of dredging and filling. As of January 1977, only about 8,500 acres of saltmarsh remained between Santa Barbara and the Mexican border, where there was formerly about 26,000 acres of saltmarsh. There are probably no more than 250 light-footed clapper rails remaining in California, with about half the population found in the Tijuana Estuary, San Diego County.

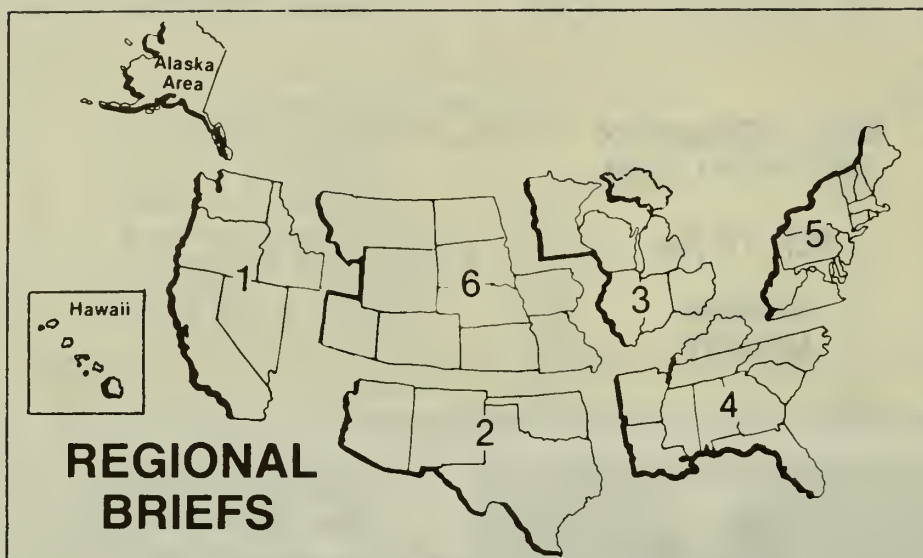
Suitable habitat for the clapper rail

consists of a marsh environment with cordgrass or pickleweed for nesting and escape cover, a supply of crabs, clams, and related invertebrates for food, and a feeding area of tidal flats interspersed with saltmarsh vegetation. As long as suitable habitat is protected, the birds seem to thrive because they face little threat from predators and they can tolerate a high level of human presence.

Specifically, the plan proposes additional research to aid in determining population numbers, distribution, and current limiting factors.

According to the recovery team, habitat degradation due to restriction of tidal flow has prevented most

Continued on page 5



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of July.

Region 1. An informal agreement was reached with officials of the San

Diego Zoological Society regarding the site, specifications, and funding of a California condor (*Gymnogyps californianus*) captive breeding facility. A formal proposal preparatory to a contract will be forthcoming from the

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U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Alaska Area:** Alaska.

The **ENDANGERED SPECIES TECHNICAL BULLETIN** is published monthly by the U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

Society.

A status report on *Stephanomeria malhenrensis*, a proposed Endangered plant in Oregon, was sent to the Washington Office with a recommendation that final listing be initiated.

Region 2. Endangered Species personnel monitored the movement of a huge oil spill that resulted from the blowout of a Mexican well on June 3. Cooperation with the Mexican Government and other agencies was arranged for the recovery of newly hatched Kemp's Ridley sea turtles (*Lepidochelys kempii*) from Padre Island, Texas, which was affected by the spill.

Region 3. A biological opinion was issued to the Nicolet National Forest in Wisconsin regarding campground development policies. According to the opinion, if certain guidelines are followed, there will be no jeopardy to bald eagles (*Haliaeetus leucocephalus*) in the area.

A report has been written to map all actions involving Endangered species reported to the Regional Office. The report enumerates and organizes each report by location, cooperating agency, and type of action. Regional staffers will be able to use this report to determine areas with inadequate reporting.

Region 4. The Red Wolf Recovery Team, cooperating with Region 2, met with Tennessee Valley Authority personnel at Land Between the Lakes (LBL) to evaluate the area as a reintroduction site for the species. According to the team, LBL personnel who manage the 170,000 acre peninsula are enthusiastic and appear capable of handling the program. However, the area has some disadvantages, so no final decision has been made.

The Endangered Species staff sponsored a 5-hour training seminar in Atlanta on Section 7 consultation. Representatives from approximately 50 agency offices in 11 States attended.

Region 5. A recovery plan for the eastern population of the American peregrine falcon (*Falco peregrinus anatum*) was submitted for final review. A Technical Review draft of the Chesapeake Bay Bald Eagle Recovery Plan was also submitted.

Region 6. Endangered Species personnel attended an intra-Service regional meeting at Park City, Utah to discuss Endangered species policy, procedures, and activities, with an emphasis on Section 7.

Alaska Area. The preliminary results of this summer's peregrine falcon banding activities have been encouraging. A total of 105 fledglings have been banded on the major nesting areas of the Porcupine, Colville, and Yukon Rivers. Funding for the operation was received through a cooperative Agreement with the Alaska Office of the

Bureau of Land Management.

The Arctic Slope Regional Corporation, in a land trade agreement with the Interior Department, has agreed to restrict land uses on Native lands along the Colville River to protect the prime nesting area of the Arctic peregrine falcon (*Falco peregrinus tundrius*). The Native Corporation will conform to Section 7 of the Endangered Species Act, just as a Federal agency would, for any proposed development in specific areas.

ENDANGERED SPECIES SCIENTIFIC AUTHORITY

Notices—July 1979

Composed of representatives from seven Federal agencies, the Endangered Species Scientific Authority (ESSA) was established by Executive order to insure the scientific soundness of governmental decisions concerning trade in endangered species of animals and plants. As the U.S. Scientific Authority for the Convention on International Trade in Endangered Species of Wild Fauna and Flora, ESSA reviews applications to export and import species protected under the Convention, reviews the status of wild animals and plants impacted by trade, monitors their trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

EXPORT FINDINGS PROPOSED FOR APPENDIX II SPECIES

Export findings were proposed by the ESSA for five Appendix II species protected by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (F.R. 7/12/79). These findings relate to whether commercial export of bobcat (*Lynx rufus*), lynx (*Lynx canadensis*), river otter (*Lutra canadensis*), Alaskan brown bear (*Ursus arctos*), or Alaskan gray wolf (*Canis lupus*) taken in the 1979-80 harvest will not be detrimental to (1) the survival of the species and/or (2) the survival of similar species protected by CITES. The ESSA states that

both findings must be positive before permits can be issued by the Wildlife Permit Office for the export of bobcat, lynx, and river otter. The ESSA believes the second finding alone must be positive before export permits can be issued for the export of Alaskan brown bear and Alaskan gray wolf.

The ESSA believes the determination of two separate findings as stated above is required by Article II 2(a) and (b) of the CITES, respectively, and constitutes a different approach from that used the past two seasons, when findings were limited to those conforming to listing under Article II 2(a). A discussion of this change was presented in the ESSA's advance notice (F.R. 4/30/79) and is treated at length in the present proposal. Additional applicable discussion on the phrase "not detrimental to the survival of the species" is presented in the ESSA's proposed procedural and interpretive regulations (F.R. 7/11/79). (See May 1979 and August 1979 BULLETINS for articles on each of the above mentioned documents.)

Proposed Findings Under Article II 2(a)

Recent information received for bobcat, lynx, and river otter is summarized on a State-by-State basis along with

proposed conditions under 2(a). Export of bobcat was proposed for approval from 14 States and from the Navajo Nation; export of river otter from 11 States; and export of lynx from 4 States with open seasons on the species. Further consideration of export of these species taken in other States awaits receipt of additional information from those States. Guidelines for findings and proposed conditions for species under 2(a) are the same as those developed for the 1978-79 season (see F.R. 4/10/78 and F.R. 7/7/78).

Proposed Findings Under Article II 2(b)

The ESSA proposed to find that export of specimens of the five species in question will not be detrimental to the survival of similar species protected by CITES. Conditions, in addition to tagging, involving international fur trade and harvest in other countries, are also proposed. Guidelines under 2(b) address the question of potential detriment to other associated species. Amendments incorporating the findings and conditions into appropriate regulations on the species were also proposed.

The final export findings are expected to be published in late September.

ESSA REGULATIONS PROPOSED

Procedural and interpretive regulations have been proposed to describe the composition and fundamental operation of the Endangered Species Scientific Authority (ESSA) (F.R. 7/11/79). The proposed rules also delineate the authorities and duties of the ESSA under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and include procedures to comply with the Freedom of Information Act, 5, U.S.C. 552.

The proposed regulations integrate and draw mainly from the CITES and Executive Order 11911, both charter documents for the ESSA. The proposal also adds other procedures and guidelines arrived at through the ESSA's experience with the publication of various export findings and the establishment of import and export policy regarding species on the CITES appendices.

Lengthy discussion is given to the phrase "not detrimental to the survival of the species" in the proposed rule, indicating ESSA's desire to interpret it more conservatively than maximum sustained yield and in a manner consistent with the principles arrived at by cooperating conservation groups in a series of 1975 workshops devoted to developing a better scientific basis for management of fisheries and other critical living resources. (These principles are published in the Sixth Annual Report of the Council on Environmental Quality, December 1975, pp. 405-407.) Pending development of a more precise definition, the ESSA expects to address the concept of scientific wildlife management in their periodic general findings for various species.

The complete proposal can be found on pages 40598-40605 of the July 11, 1979, *Federal Register*.

Rulemaking Actions July 1979

STATUS OF SEVEN U.S. SPECIES CLARIFIED

Because of an oversight in the listing process in 1973, the U.S. populations of seven Endangered species have been found not to be covered by the Endangered Species Act (F.R. 7/25/79). Two birds, the short-tailed albatross (*Diomedea albatrus*) and thick-billed parrot (*Rhynchopsitta pachyrhyncha*) and five mammals, the wood bison (*Bison bison athabasca*), northern swift fox (*Vulpes velox hebes*), jaguar (*Panthera onca*), margay (*Felis wiedii*) and ocelot (*Felis pardalis*) were affected by the oversight.

Foreign populations of these species are not affected and still receive full protection. Furthermore, since the fact that the U.S. populations are not on the list is due to a legal oversight rather than a change in their biological status, the Service has urged all Federal and State agencies to

provide them with the same consideration which listed species receive.

The seven species were included on the old foreign endangered species list under the 1969 Endangered Species Conservation Act. When the 1973 Act was passed, the distinction between U.S. and foreign populations was dropped and the two lists were merged. The seven then appeared on the merged list as Endangered throughout their ranges, but the Governors of affected U.S. States had not been given an opportunity to first comment on their status. Governors' comments are mandatory before the listing of U.S. species can take effect, so the listings of U.S. populations on the merged list were invalid.

The Service plans to move quickly to repropose the species.

TWO CROCODILES PROPOSED FOR ENDANGERED STATUS

After a status review of two crocodilian species, the Service has issued a proposed rulemaking to list, as Endangered, the American crocodile (*Crocodylus acutus*) outside of Florida, and the saltwater or estuarine crocodile (*Crocodylus porosus*) exclusive of the Papua New Guinea population (F.R. 7/24/79). Both species were found to be suffering from serious habitat

losses throughout their ranges and have been subject to extensive poaching for their hides.

All populations of saltwater crocodiles and American crocodiles (except in Florida) were previously proposed as Endangered under the Similarity of Appearance clause of the Endangered Species Act (F.R. 4/6/77). No final action has been taken on that pro-



The saltwater crocodile may be the largest of reptiles, with reported lengths of well over 20 feet.

posal. The Florida population of American crocodile is already listed as Endangered (F.R. 9/25/75) and Critical Habitat designated (F.R. 9/24/76). The exclusion of the Papua New Guinea population of saltwater crocodiles from the current proposal resulted from that government's assurance that strict controls are placed on crocodile farming within the country and the species is not being jeopardized by this activity.

This rule would provide additional protection to both species, which are already listed on the appendices to the Convention on International Trade in Endangered Species of Wild Fauna and Flora, by further restricting commercial trade in their parts and products.

Both species have felt the impacts of human encroachment. Increasing human populations in Central America, the Caribbean, and South America have resulted in a loss of much available habitat for the American crocodile. The same holds true for the saltwater crocodile in some Southeast Asian countries. However, the major factor in the decline of both species is hunting for hides which are valuable in the production of fashionable leather goods. In some countries, where these species are not protected, populations have been virtually eliminated because of hunting. There have also been reported incidents of killings arising from fear, especially involving saltwater crocodiles in areas where the species has a reputation as a man-eater.

Comments on this proposed rule should be submitted by October 26, 1979, to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

COSTA RICAN TREE UNDER REVIEW

The Service is reviewing the status of *Jatropha costaricensis*, a Costa Rican shrub to tree species, to determine if it should be added to the U.S. List of Endangered and Threatened Wildlife and Plants.

According to data submitted in support of the petition for review, the species occurs in dry, open woodlands near Playas del Coco, Guanacaste, Costa Rica.

The Service is requesting information on the species' status, distribution, population trends, threats, or other pertinent data. Information should be submitted to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240, on or before October 29, 1979.

SHORE BUG STATUS UNDER REVIEW

The status of an insect known only from Wilbur Hot Springs, Colusa County, California is being reviewed by the Service to determine if it should be added to the U.S. List of Endangered and Threatened Wildlife and Plants. The Wilbur Springs shore bug (*Saldula usingeri*) faces a possible threat from

proposed geothermal development in the area. Information regarding the status of this species should be submitted on or before September 28, 1979, to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

ENDANGERED STATUS GIVEN TO SAGITTARIA FASCICULATA

Sagittaria fasciculata (bunched arrowhead) has been listed by the Service as an Endangered species (F.R. 7/25/79). Only two populations of this plant, occurring in North and South Carolina, now exist. The North Carolina population of *Sagittaria fasciculata*, found in Henderson County, has been almost completely destroyed by industrial development, highway and railroad

construction, and herbicide use. This population is located in a seepage near a highway and adjacent to a railroad bank. Grading and filling operations involved in widening the highway, and the resultant changes in drainage patterns of the area have reduced the habitat of this plant. Herbicides sprayed along the railroad have also damaged the population. Railroad work earlier this year left a very small

and extremely vulnerable population in North Carolina. In Greenville County, South Carolina the second population occurs in a power line right of way, along the headwaters of a river. The openness of this habitat, which is maintained by Duke Power Company, is probably responsible for the vigorous nature of *Sagittaria fasciculata* at this location. Both populations occur on private lands and could be threatened by future development. This rulemaking, which went into effect on August 31, 1979, makes it generally unlawful to import or export this species, or to deliver, receive, carry, transport or ship this species in interstate or foreign commerce by any means, or sell or offer for sale in interstate or foreign commerce. It also protects the plant from any Federal government projects which might otherwise jeopardize its existence.

RULEMAKING ACTIONS Continued on page 6



Probably no more than 250 light-footed clapper rails remain in California.

RECOVERY Continued from page 1 marshlands from supporting optimum densities of rails. The team says that reestablishing tidal flow should automatically improve conditions for rails. In addition, improving marsh plant growth through ditching and grading of lands is recommended by the plan to further help reestablish rail populations. The plan also calls for a release program involving transplanted or captive-raised rails.

To carry out these activities, the plan calls for the involvement of the Fish and Wildlife Service, the California Departments of Fish and Game and Parks and Recreation, Santa Barbara County, and the Department of the Navy, among others.

Woundfin The Woundfin Recovery Team has developed a plan aimed at enhancing



The Woundfin Recovery Plan calls for at least two additional self-sustaining wild populations.

existing populations, managing habitat, and restoring at least two additional populations of the species within its historic range. The woundfin, the most silvery of all American minnows, currently exists only in the Virgin River from LaVerkin Springs and the lower portion of LaVerkin Creek in Utah, to Lake Mead in Nevada.

Records indicate that the woundfin lived as far up the Gila River system as the Salt River at Tempe, Arizona and the Colorado River from Yuma to, and including the Virgin River. It is probable that woundfin also occurred further upstream on the Gila, Salt, and Verde Rivers. Construction of dams and reservoirs on these rivers and on the mainstream of the Colorado River has virtually eliminated woundfin habitat.

To achieve the ultimate goal of a complete delisting of the species, the recovery team has recommended that at least two suitable habitat sites be selected, management plans be prepared, and these sites be stocked with transplanted woundfin. Among possible transplant sites recommended by the team are the upper Gila and upper Verde Rivers in Arizona, and perhaps the Bill Williams, Moapa, and Hassayampa Rivers.

Eastern Brown Pelican The eastern brown pelican was known to nest along the coasts of eastern Mexico, Texas, Louisiana, Florida, South Carolina, and North Carolina. By the early 1960's, the brown pelican had been extirpated from Louisiana and nearly so from Texas. Significant U.S. breeding populations are now limited to Florida and South Carolina.

Why the brown pelican was the only coastal breeding bird to suffer so severely during the 1950's and '60's cannot be adequately explained. Whatever the cause, it was pervasive enough to exterminate a population in spite of its large numbers. To better understand the threats facing this species, the recovery plan includes among its objectives, the identification, monitoring and control of population limiting factors.

The primary objective of the plan is to prevent further extirpation of the species in its historic range and to restore it in vacant nesting habitat. Birds from the Florida population have provided breeding stock for Louisiana, and a restocking project using crippled pelicans from Florida is currently being attempted in Texas.

Continued on page 6

RECOVERY Continued from page 5 Copies of approved recovery plans may be obtained from the Fish and Wildlife Reference Service, 3840 York Street, Unit I, Denver, Colorado 80205. There will be a charge for cooperators (those receiving funds under the Federal Aid in Fish and Wildlife Restoration programs and the Anadromous Fish Conservation program, including the Fish and Wildlife Service) of 10¢/page over 100 pages for a photocopy, and 50¢/fiche over 20 fiche for microfiche. (None of the above referenced recovery plans runs more than 100 pages.) Clients (agencies, organizations, and individuals not listed as co-operators) will be charged a flat rate of 10¢/page and 50¢ fiche.

RULEMAKING ACTIONS Continued from page 5

WEST AFRICAN MANATEE THREATENED

The West African manatee (*Trichechus senegalensis*) has been determined to be a Threatened species in a final rulemaking issued by the Service (F.R. 7/20/79). Prompted by data submitted by the Marine Mammal Commission, this rulemaking, coupled with protection given the species under the Marine Mammal Protection Act, will provide additional import prohibitions and restrictions on transportation or sale in interstate or foreign commerce.

Occurring in the coastal waters and adjacent rivers along the west coast of Africa, the manatee population has been seriously depleted because of intense hunting. Hunting has led to the extermination of the species in the

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	33	251	284	3	19	22
Birds	67	145	212	3		3
Reptiles	11	48	59	10		10
Amphibians	5	9	14	2		2
Fishes	29	11	40	12		12
Snails	2	1	3	5		5
Clems	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	23		23	2		2
Total	200	467	667	39	19	58

Number of species currently proposed: 160 animals, 1,850 plants (approx.)
Number of Critical Habitats listed: 34
Number of Recovery Teams appointed: 66
Number of Recovery Plans approved: 25
Number of Cooperative Agreements signed with States: 23

July 31, 1979


Niger and Mekrou Rivers along the northern boundary of Benin. In Liberia and Sierra Leone, manatees are taken with guns and harpoons in spite of existing protective regulations.

Another factor causing a decline in the species is accidental drowning in fish nets, particularly those set for sharks. It is also possible that West African manatees, like the West Indian manatees (*Trichechus manatus*) in Florida, may be victims of accidental collision with motorboats. Damming of rivers and increased boat and ship traffic in many areas may also contribute to the species' decline.

Because the West African manatee is a foreign species, Critical Habitat may not be designated. This rulemaking will take effect October 16, 1979.

FINAL ALLIGATOR RULES ANTICIPATED

Special rules ending a decade-long ban on international trade in the American alligator (*Alligator mississippiensis*) will be finalized in mid to late September, 1979. Comments and data received in response to the corresponding proposed rule (F.R. 7/18/79) will be reviewed in preparation of this final rule. This action will be featured in the October 1979 BULLETIN.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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AMENDED ACT REQUIRES NEW REGULATIONS

Listing and Critical Habitat determination procedures were among those activities of the Endangered Species Program most substantially altered by the Endangered Species Act Amendments of 1978. The Service has now proposed regulations to formalize listing policies already established, and implement the changes brought by the Amendments (F.R. 8/15/79). When finalized, this will be the first set of official regulations to implement Section 4 of the Act.

Most of the newly introduced features revolve around the Critical Habitat determination process, including:

- guidelines for public meetings and hearings;
- publication of Critical Habitat proposals in local newspapers accessible to people in the affected area(s);
- establishment of the need for analysis of economic and other impacts of Critical Habitat designation.

Other aspects of the Amendments covered by the regulations include the requirement of public meetings in conjunction with listing actions, (when requested), procedures to receive and evaluate petitions to list species, and procedures for conducting periodic reviews of all listed species.

Listings to Include Critical Habitat

The Amendments require that Critical Habitat be specified at the same time that a species is listed, "to the

Continued on page 3

Photo by Steve Hillebrand



A peregrine falcon soars by the Washington Monument—a sign of the successful release program in the Nation's Capital.

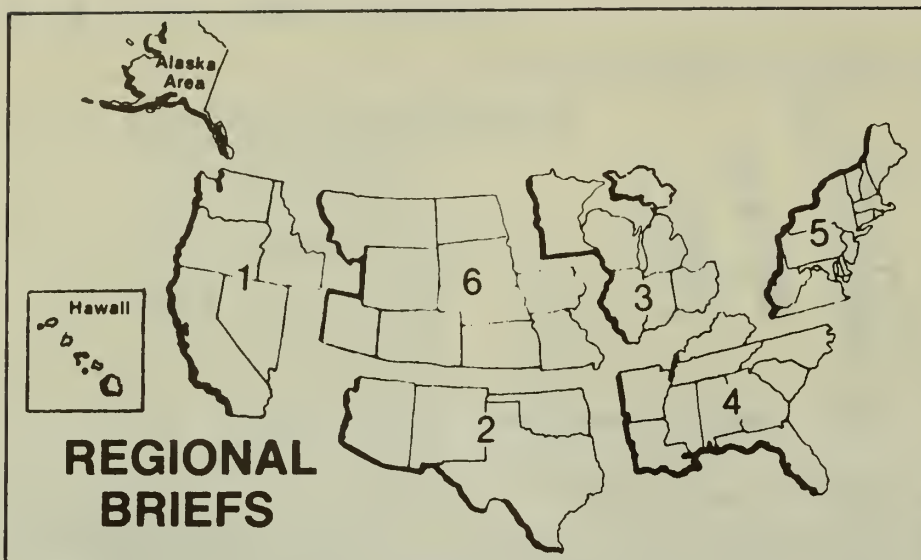
PEREGRINE'S PROGRESS— RELEASE PROJECT A SUCCESS

Four peregrine falcons (1 male and 3 females) are now on their own in Washington, D.C. and vicinity—the result of a release project conducted by the Service and the Peregrine Fund of Cornell University. The peregrines had been placed in a man-made nest on top of the Interior Department building in June, as month-old chicks (see the July 1979 BULLETIN), and were released on July 9, after they had fledged.

Under the watchful eyes of Sharon and Tom Allan, the birds made their initial flights and developed the skills necessary for hunting. On August 6, the Allans departed and the birds were completely self-sufficient.

The birds have been adjusting well to the urban environment and have been establishing territories throughout the area. One has been spotted near a suburban Virginia shopping center, and another has chosen to roost on the Department of Commerce building and use the Mall near the Smithsonian Institution as its territory.

It is not known whether any of the peregrines will stay in the Washington area during the winter, or choose to migrate south along the coast, or even if they will return to the area next year. It is hoped that these falcons will select mates within 2 years from other captive-bred peregrines released by Cornell in the East, and eventually produce young.



Endangered Species Program regional staffers have reported the following activities for the month of August.

Region 1. Peregrine falcon (*Falco peregrinus anatum*) surveys in Oregon have revealed a probable three nesting

pairs in the State; none were known before this year.

A site was selected for the California condor (*Gymnogyps californianus*) breeding facility on the grounds of the San Diego Wild Animal Park. The Zoological Society of San Diego sub-

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U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Alaska Area:** Alaska.

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mitted a formal proposal for construction of the facility, meeting specifications called for by Service personnel. (A contract was awarded on September 30.)

Despite intense control efforts, which included the use of helicopters, a coyote took a whooping crane chick at Gray's Lake. Eight or possibly nine chicks from this year's cross-fostering program are alive, a better than average record. Seven sub-adults survive from previous years' transplants—2 in Wyoming, 1 at Bear Lake, Idaho, and 4 at Gray's Lake, Idaho.

Region 2. The Service met with the Mexican Department of Fisheries and the University of Mexico to discuss cooperative projects for the benefit of the Olive Ridley sea turtle (*Lepidochelys olivacea*). As a result of the meeting, arrangements will be made for two Mexican biologists to visit the National Marine Fisheries Service Laboratory in Galveston to observe the mariculture facilities and techniques applicable to raising sea turtles.

The Campeche oil spill has reached Texas shores, and attempts were made to assess the impact on Endangered species in the U.S. and Mexico. Most susceptible to the spill is the Kemp's Ridley sea turtle (*Lepidochelys kempii*), both young and adults. Full effect of the spill probably will not be known until the next nesting season. Contingency plans have been made to protect peregrine falcons, whooping cranes, brown pelicans, and sea turtles. A treatment center and bird cleaning operation has been set up.

Region 3. The Service initiated contracts to conduct plant surveys throughout the Region's six States.

Regional staffers met with the National Park Service in the Apostle Islands in Wisconsin to discuss procedures for Section 7 consultations and bald eagle (*Haliaeetus leucocephalus*) management.

The Northern States Bald Eagle Recovery Team met in Milwaukee and reviewed the initial draft of the recovery plan.

A compendium of surveys of clams of the upper Mississippi River has been finalized.

Region 4. Nine contracts were negotiated to provide status information on 123 species. This brings the number of plant species under contract to 228, covering all of the region including Puerto Rico and the Virgin Islands.

Region 5. The first Endangered Species Cooperative Agreement to specifically authorize conservation activities for plants was signed with Connecticut on August 8, 1979. Plant agreements were authorized by the

Endangered Species Act Amendments of 1978.

The Service conducted a three-day workshop on New England's Endangered and Threatened flora at Waterville Valley, New Hampshire August 3-5, to consolidate State reports prepared in 1978 and formulate a New England Regional Report. Next year's field activities will emphasize candidate species which were not recognized in the Smithsonian Institution's initial list.

Region 6. The Indiana/Gray Bat Recovery Team, led by Dr. Richard LaVal, Missouri Department of Conservation, met in Washington, D.C. to begin drafting a recovery plan for the gray bat (*Myotis grisescens*) and revising the plan for the Indiana bat (*Myotis sodalis*).

AMENDMENTS

Continued from page 1

extent prudent." The regulations make this provision and also require that biological and physical constituent elements essential to the species (e.g. nesting grounds, water quality, pollinator, etc.) be pointed out in the Critical Habitat descriptions. They further provide that geographical areas not currently occupied by the species may be included in Critical Habitat determinations, but only when limiting the determination to the species' occupied range would not be adequate to ensure the survival and recovery of the species.

In certain situations designation of Critical Habitat would not be prudent. The proposed rules provide that Critical Habitat not be determined when a

species needs immediate listing protection, and delay caused by the preparation of a Critical Habitat rule would have a detrimental effect on it; when identification of the Critical Habitat would make the species more vulnerable to taking; or when Critical Habitat determination would not be beneficial to the species.

Economic Analysis

The new requirement for an economic analysis of the effects of Critical Habitat determination, coupled with the requirement that each listing include Critical Habitat, when prudent, has produced a significant slowdown in the Program's accomplishment of final actions of either type. Mechanics for implementing this portion of the Amendments are yet to be completely

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ENDANGERED SPECIES SCIENTIFIC AUTHORITY

Notices—August 1979

Composed of representatives from seven Federal agencies, the Endangered Species Scientific Authority (ESSA) was established by Executive order to insure the scientific soundness of governmental decisions concerning trade in endangered species of animals and plants. As the U.S. Scientific Authority for the Convention on International Trade in Endangered Species of Wild Fauna and Flora, ESSA reviews applications to export and import species protected under the Convention, reviews the status of wild animals and plants impacted by trade, monitors their trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.



American ginseng.

Photo by J. Dan Pittilo

GINSENG FINDING FINALIZED

The ESSA has established final findings for ginseng roots harvested in 1979. ESSA's "approval" of export from 14 States indicates that harvest in those areas will not be detrimental to the survival of the species, and that the ESSA has no objection to issuance of export permits from those States (F.R. 8/15/79). Such approval does not, however, limit the Management Authority's (MA) right to withhold per-

mits on other grounds.

Federal export permits may be issued only for ginseng roots harvested in the States for which the MA (U.S. Fish and Wildlife Service) is satisfied the State ginseng management and control programs assure that the roots to be harvested will be legally obtained and certified. States approved by the MA are: Arkansas, Georgia, Illinois, Indiana, Iowa, Kentucky, Maryland, Min-

nesota, Missouri, North Carolina, Tennessee, Virginia, West Virginia, and Wisconsin.

Effective October 1, 1979, State certification of artificially propagated ginseng will also be a condition of the CITES export document. This means that any artificially propagated ginseng leaving a State must be certified by weight, just as wild ginseng is certified.

Rulemaking Actions

Continued from page 4

and reproduction, and it is intolerant of human presence. When disturbed, the big-eared bat will abandon its roost, resulting in a population reduction. Their dependence on the few remaining nursery caves and the ease with which they are disturbed make the entire population subject to extermination under certain conditions.

The West Virginia population of big-eared bat, numbering 2,500-3,000, is the largest of the three existing populations; the other two are in eastern Kentucky and southwestern Virginia. In West Virginia, at least five wintering colonies have disappeared in the last 15 years and only three known nursery colonies still remain. The numbers in these nursery colonies have declined considerably because of disturbances from spelunkers and vandals.

As required by the 1978 amendments, this Critical Habitat proposal includes a discussion of activities which may adversely modify the habitat, or which may be affected by the designation. According to the proposal, these activities would include any action which would substantially alter the physical structure, temperature, humidity, or air flow of the designated caves, or any action (such as blasting or construction near designated caves, or increased human access to the caves) which might disturb the bats in their hibernating or nursery caves.

Comments on this proposal should be submitted by November 1, 1979, to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	33	251	284	3	21	24
Birds	67	145	212	3		3
Reptiles	11	48	59	10		10
Amphibians	5	9	14	2		2
Fishes	29	11	40	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	23		23	2		2
Total	200	467	667	39	21	60

Number of species currently proposed: 160 animals
1,850 plants (approx.)

Number of Critical Habitats listed: 34
Number of Recovery Teams appointed: 66
Number of Recovery Plans approved: 29
Number of Cooperative Agreements signed with States: 24

August 31, 1979

NEW PUBLICATIONS

The American Society of Mammologists has issued a Special Publication entitled *Ecology and Behavior of the Manatee in Florida*. Written by Daniel S. Hartman of Cornell University, this book chronicles the author's research conducted primarily in Citrus County, Florida. The book is priced at \$10.00 for non-members of the Society and \$8.00 for members. Copies may be ordered from Duane A. Schlitter, Car-

negie Museum of Natural History, 4400 Forbes Avenue, Pittsburgh, Pennsylvania 15213.

The first in a three-part series called *Life Tracks* is now available upon request from the Wisconsin Office of Endangered and Nongame Species, Department of Natural Resources, P.O. Box 7921, Madison, Wisconsin 53707. Eleven of the State's endangered birds and mammals are discussed.



ENDANGERED SPECIES TECHNICAL BULLETIN

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AMENDMENTS

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established and are not specifically provided for in the proposed rules.

The regulations do provide that certain areas may be excluded from Critical Habitat determinations if the benefits of doing so outweigh the benefits of including such areas. They further provide, however, that no exclusion would be allowed if, as a result, extinction of a species would occur.

Petition and Review Requirements

Examples of evidence required to petition the Service to review the status of species for protection under the Act are clearly enumerated in the proposed rules. The Service's responsibilities for acknowledging petitions and conducting reviews are spelled out. Procedures for notification of Federal, State, and local governments regarding listing activities plus time allotments for comment periods, are specified. Additionally, the regulations propose a review, once every five years, to determine whether any species should be reclassified or removed from the list.

Emergency Rules

When significant immediate risks to the well-being of an animal species develop, procedural requirements for listing may be waived temporarily. Publication of an emergency listing in the *Federal Register* can immediately place a species under the Act's protection. Such a listing, however, would expire after 120 days unless ordinary procedural requirements had been complied with during that period.

New Format for Official List

The official U.S. List, published annually in the *Federal Register*, contains all the animals and plants protected under the Act. Several changes in the format of the list are proposed: Both lists (animals and plants) will include a column describing "Historic Range" (for information purposes only) as well as a column indicating the "Population where Endangered or Threatened." (A column entitled "Known Distribution," currently used in the lists, will be eliminated.) A new column will indicate whether or not Critical Habitat has been determined for the species. The plant portion of the list will give "Historic Range," but will not specify "Populations," since individual plant populations cannot be listed under the Act.

The complete text of the proposed regulations are found on pages 47862-47868 of the August 15, 1979, *Federal Register*. (Comments were invited through October 15, 1979).

Rulemaking Actions

August 1979

TWO ZEBRAS LISTED AS THREATENED

In a final rulemaking, the Service has given Threatened status to both Grevy's zebra (*Equus grevyi*) and Hartmann's mountain zebra (*Equus zebra hartmannae*) (F.R. 8/21/79). These species were proposed for Endangered status (F.R. 12/23/77). However, data received during the comment period indicated that neither animal is in immediate danger of extinction, although each does face serious threats to its long-term survival. The rulemaking will increase the protection already provided for these species by the Convention on International Trade in Endangered Species of Wild Fauna and Flora by requiring permits for importation and other activities involving the species or their parts or products.

Grevy's zebra, the largest of the zebras, occurs in northern Kenya, and has apparently been extirpated from southern Ethiopia and Somalia where it formerly occurred. At the time this species was proposed as Endangered, it was thought that less than 1,500 individuals existed. However, a survey conducted by the Kenya Rangeland Ecological Monitoring Unit turned up close to 14,000 individuals. This new and more accurate data combined with Kenya's conservation efforts on behalf of the species (such as a ban on hunting since May 1977) has led to the determination that a Threatened listing is more appropriate.

In spite of these larger figures, the species is still in need of protection, according to the Kenya Minister for Tourism and Wildlife. He said that in the Samburu District, a key portion of the Grevy's range, the species had declined from 7,000 in 1976 to 2,500 in 1977.

Hartmann's mountain zebra occurs, in part, on large tracts of privately owned ranches in Southwest Africa/Namibia. The Service believes that controlled sport hunting of this species on Southwest African/Namibian ranches has aided the species' conservation. According to the Southwest African/Namibian Government, ranchers would destroy these zebras on sight were it not for their economic value. Currently, ranchers have been supplementing their incomes by allowing sportsmen to hunt zebras on their property. These hunts are strictly controlled by the Southwest African/Namibian Government, which will only issue a permit for such hunts if a rancher can demonstrate that excessive populations are damaging his property. Although the Hartmann's population has remained stable for the past decade, the current numbers (7,000 individuals) are quite small considering the population once numbered between 50,000 and 75,000.

Because both of these species are foreign, Critical Habitat is not proposed.

CRITICAL HABITAT REPROPOSED FOR VIRGINIA BIG-EARED BAT

The Service has repropoed the Critical Habitat for the Virginia big-eared bat (*Plecotus townsendii virginianus*) to meet the requirements of the Endangered Species Act Amendments of 1978 (F.R. 8/30/79). A proposal for Endangered status with Critical Habitat was made for the species on December 2, 1977, but the Critical Habitat portion was subsequently withdrawn on March 6, 1979, because of

the procedural and substantive changes in making such a designation brought about by the amendments. (See October 1978 BULLETIN for a discussion on the amendments.)

Several caves in Pendleton and Tucker Counties in West Virginia would be affected by the proposal. The big-eared bat is dependent on a few specific kinds of caves for hibernation

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PEREGRINE FALCON, HUMPBACK CHUB RECOVERY PLANS APPROVED



Photo by J. Suttikus

Its distinctive features—prominent hump, flattened head, long fleshy snout, and small eye—combine to enable the humpback chub to survive in the Colorado River.

The Service recently approved recovery plans for the Eastern population of peregrine falcon (*Falco peregrinus*) and the humpback chub, (*Gila cypha*) one of the last large fish species to be discovered in North America.

Restoring the peregrine falcon to the Eastern United States, where the species has been extirpated as a breeding bird since the 1950's, is the objective of one of the four recovery plans being prepared for this widespread species. (The plan for the Rocky Mountain/Southwest population of peregrine falcons was approved in August 1977.) The specific goal of the plan is to restore an estimated 350 pairs, or 50 percent of the numbers that occurred in the East in the 1940's. To achieve this goal, the plan recommends a recovery program based on preserving and providing nesting habitat, introducing captive-produced birds to the wild, preserving migration and wintering habitat, and providing protection for the birds.

An inventory of peregrine nest sites has indicated historic and potential sites in the southern Appalachians, the Susquehanna River Valley, Finger Lakes, Hudson River Valley, Catskill and Adirondack Mountains, Green Mountains, Connecticut River basin, White Mountains, and the upper Mississippi River in Minnesota and Wisconsin. The recovery team has recommended locations which it considers to be suitable for falcon "occupancy" and for "occupancy and release" of

captive-raised birds. Management plans would be developed for individual sites with initial priority for those found suitable for "occupancy and release."

The primary facility for captive breeding of peregrines in the East is at Cornell University. This facility will have approximately 30 egg laying falcons by 1980. With a maximum of 30 breeding females, each producing two clutches, the yield should total 240 eggs per year. Allowing for predictable infertility, hatching losses, and for some birds to be held in captivity, the Cornell facility should produce 100-150 peregrines per year.

In June of this year, a peregrine release project was launched from the roof of the Interior Building in Washington, D.C. (See box). This release project, and others like it, have become necessary to reverse the damage to the peregrine caused by DDT contamination. DDE, a metabolite of DDT, causes eggshell thinning resulting in eggs breaking during normal incubation. Eggshell thinning substantially lowered the breeding success of the peregrine and led to its demise in the East.

Humpback Chub

The humpback chub occurs in the Colorado River basin. Its existence was not known until the 1940's because of its restriction to canyon areas that were inaccessible to early re-

searchers. Because of man-made alterations that occurred on the Colorado River before the 1940's, it is possible that populations of the species were lost even before its existence was known. Impoundments and cold tailwaters created by the operation of Flaming Gorge and Glen Canyon Dams, and perhaps Hoover Dam, are the major reasons for the humpback chub's decline. Other possible reasons are predation and hybridization.

To assist this species, the recovery plan has outlined steps to achieve the goal of establishing and maintaining a minimum of five self-sustaining humpback chub populations in the Colorado River system by 1990. The plan calls for identification of essential habitat and limiting factors. According to the plan, for the recovery program to work some populations and habitats will have to be stabilized while others will have to be increased.

All existing populations must be located. There are currently four known populations, but others may exist in inaccessible locations. If necessary, the plan suggests restoring humpback chub populations through transplants. These should occur in habitats where natural reproduction is possible. The plan recommends that reintroductions be made in areas which are geographically isolated from existing populations to avoid destruction of several humpback chub populations by a single natural or man-made biological disaster.

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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

SERVICE LISTS 32 PLANTS

Acting to protect some of the world's rarest plant species, the Service has added 30 native and 2 foreign plants to the U.S. List of Endangered and Threatened Species.

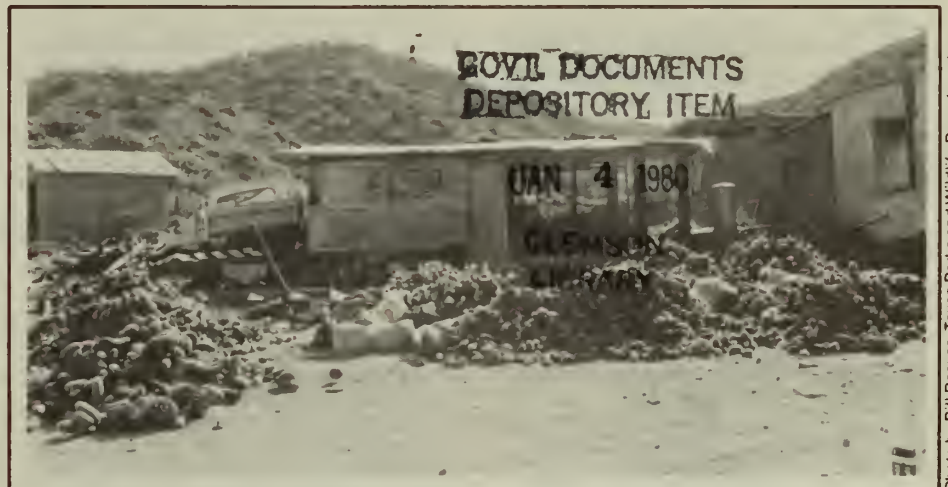
Most of the U.S. plants (listed between October 2 and November 7) are cacti—generally prized by collectors for their unique beauty, and threatened by domestic and international commerce (as well as other factors) which will be more readily controlled under Endangered Species Act provisions.

As with most endangered species, plants are especially vulnerable once they are distinguished for their rarity—a label that sometimes boosts their value (until they are sufficiently propagated and available in cultivation), making their protection difficult. International commerce in cacti (all of which are protected under Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, or CITES) and other plant species remains lucrative, and massive taking of these plants for the world market has seriously diminished their numbers in the wild.

According to the Agriculture Department's Animal and Plant Health Inspection Service (APHIS)—having import/export enforcement responsibility for plants, some 6.8 million specimens of cacti and succulents were shipped into the U.S. during Fiscal Year 1978. The Fish and Wildlife Service's Wildlife Permit Office recorded the lawful export of over 5,000 cacti from the U.S. during calendar 1978.

In addition to exploitation by collectors and dealers, entire plant communities are often obliterated by urban development, strip mining, land drainage, flooding, habitat erosion, fire, grazing, and ORVs (off-road vehicles).

All of the native plants protected in the Service's recent rulings were



The practice of cactus rustling, as seen here, poses severe problems for the existence of many species.

among 1,783 plant taxa proposed for Endangered classification in the June 16, 1976, *Federal Register*. This proposal was based in large part on the January 9, 1975, report of the Secretary of the Smithsonian Institution, which cited over 3,100 U.S. vascular plant taxa considered endangered, threatened, or extinct. (On July 1, 1975, the Service published a notice of review indicating acceptance of the Smithsonian report as a petition, and soliciting data on these plants. This notice remains in effect, with comments sought.)

Two foreign species, the Guatemalan fir and Chilean false larch, were proposed separately for listing (F.R. 9/26/75) after the Fund for Animals petitioned the Service to provide Federal protection to all species included on Appendix I of CITES.

Public hearings were held on all of the proposed plant listings, and comments have been summarized in the

respective final listings. General comments on the native plants were contained in the Service's final rules detailing permit regulations for protected plants (F.R. 6/24/77) and with the listing of 13 plants last year (F.R. 4/26/78).

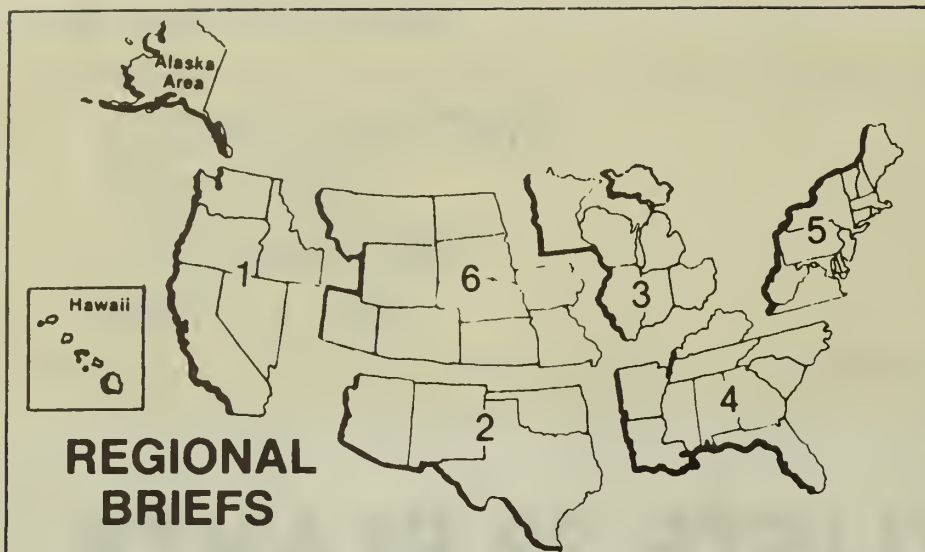
Native Plants

Twenty-one of the recently listed plants are members of the cactus family. The status and distribution of all 30 native taxa (as well as threats to their existence) are discussed below by family.

Asteraceae (Aster family):

- *Lipochaeta venosa*—This shrubby, sunflower-like plant, belonging to a genus that has evolved extensively in the Hawaiian Islands, has been listed as Endangered (F.R. 10/30/79). Once more widespread on the Island of Hawaii, *Lipochaeta venosa* is now confined to Kipuka Kalawamauna on the "Big Island" (on the western flank of

Continued on page 5



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of October.

Region 1. The results of this past summer's Hawaiian forest bird survey indicate that the Hawaiian hawk (*Buteo solitarius*) is more widely distributed on the "Big Island" than had been expected. On the Island of Lanai,

only two native species—'Apapane (*Himatione sanguinea sanguinea*) and Pueo (*Asio flammens sandwichensis*)—were found; neither is Endangered.

The California Department of Fish and Game assisted in a survey of birds of San Clemente Island. Five San Clemente loggerhead shrikes (*Lanius ludovicianus mearnsi*) and 15 San

Clemente sage sparrows (*Amphispiza belli clementae*) were observed during the 2-day survey.

Region 2. Jack Woody was part of a group invited to review the mariculture operation (PIOSA) of Sr. Antonio Suarez in Oaxaca, Mexico. Sr. Suarez requested the review to receive comments on his commercial use of Olive Ridley sea turtles (*Lepidochelys olivacea*). The group, which included sea turtle biologists from the U.S. and Mexico, saw every phase of the operation—nesting beaches, catching of turtles, slaughterhouse, and packaging. It was agreed that discussions should continue in order that the turtles be maintained as a viable part of Mexican wildlife.

Region 4. With the closure of Tellico Dam expected around the first of the year, a concerted effort was made during October to remove all remaining snail darters (*Percina tanasi*) from the Little Tennessee River. A very low catch rate at month's end indicated that few fish were left. As of October 31, 410 adults had been captured and stocked in the Holston River, 5 pairs of adults were kept at TVA facilities for development of propagation techniques, and 324 young of the year were placed in the Morristown State Hatchery for further rearing. These latter fish are to be stocked in the Holston River upon reaching adult size. (See October 1979 BULLETIN.)

Region 5. Public hearings/meetings on proposed Critical Habitat for the Virginia big-eared bat (*Plecotus townsendii virginianus*) and the Plymouth red-bellied turtle (*Chrysemys rubriventris bangsi*) were held in Elkins, West Virginia, and Plymouth, Massachusetts, respectively.

Region 6. A contract has been awarded to Mr. Wayne Winter to use three Labrador retrievers to search a minimum of 10,000 acres of prairie dog colonies for black-footed ferrets (*Mustela nigripes*). Most of the work will be conducted in South Dakota, but provisions are included for searches outside the State.

A year-old member of the Gray's Lake whooping crane flock was observed on the eastern side of the Rockies near Longmont, Colorado, and later at Monte Vista National Wildlife Refuge, a stopover spot for this flock. The sighting relieved concerns that the bird might join the Canada-Aransas flock, whose members occasionally migrate through eastern Colorado. The bird is somewhat of an eccentric, as it did not summer at Gray's Lake and it spent last winter in Mexico rather than at the Bosque del Apache Refuge in New Mexico.

The Indiana/Gray Bat Recovery Team met to discuss the Gray Bat Recovery Plan. A final draft plan will

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U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Alaska Area:** Alaska.

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likely be completed at a December team meeting.

Alaska Area. Two peregrine falcons (*Falco peregrinus tundrius*) trapped on Padre Island, Texas, in early October were banded as nestlings this summer in Alaska. The falcons were from separate eyries on the upper Yukon River between the Canadian border and Circle, Alaska.

Region 3 Plant Surveys

The Twin Cities Regional Office is sponsoring a literature review and herbarium search as well as field checks in an effort to compile data on rare plants of the Great Lakes States. Anyone with information of value on the status of plants that may be candidates for Federal protection should contact one of the following:

Illinois: Natural Land Institute, 904 South Anderson, Urbana, IL. 61801 (Attn: Dr. John White, Tel. 217-367-8770)

Indiana: Dr. Theodore Crovello, Department of Biology, University of Notre Dame, Notre Dame, IN. 46556 (Tel. 219-283-7496)

Michigan: Dr. John Beaman (Beal-Darlington Herbarium, East Lansing, MI. 48823 (Tel. 517-355-4696)

Minnesota: Minnesota Department of Natural Resources, Natural Heritage Program, Research & Policy Section, Box 11, Centennial Office Building, St. Paul, MN 55155 (Attn: Barbra Coffin, Tel. 612-296-4284)

Ohio: Ohio Department of Natural Resources, Division of Natural Areas & Preserves, Fountain Square, Building D, Columbus, OH 43225 (Attn: Richard Moseley, Tel. 614-466-7803)

Wisconsin: Wisconsin Department of Natural Resources, Box 7921, Madison, WI 53707 (Attn: James Hale, Tel. 608-266-9168)

PUBS CORRECTION

In the September 1979 BULLETIN, we inadvertently failed to mention the \$.50 per copy cost of *Life Tracks*, published by the Wisconsin Office of Endangered and Nongame Species. We regret the inconvenience.

Wesley Named to Head Management Operations Branch

David J. Wesley, 30, has been appointed Chief of the Office of Endangered Species' Branch of Management Operations—responsible for overseeing land acquisition, cooperative

agreements with the States, recovery planning, and consultations with Federal agencies under Section 7 of the Endangered Species Act.

Formerly staff biologist for Headquarters, U.S. Air Force, Wesley joined the Office of Endangered Species in January 1978, and has recently served as coordinator for Section 7 consultations. He is a graduate of the University of Florida, and holds a master's degree in wildlife management from the Virginia Polytechnic Institute and State University.

BALD EAGLE RECOVERY TEAM APPOINTMENTS COMPLETED

The fifth and final Bald Eagle Recovery Team, this one for the Pacific coast population, was appointed in September. The team will be responsible for preparing a recovery plan for the bald eagle (*Haliaeetus leucocephalus*) in Washington, Oregon, California, Nevada, and Idaho. Working with team

leader Ronald M. Jurek, California Department of Fish and Game, are: Carroll Rieck, Washington Department of Game; Ralph Opp, Oregon Department of Fish and Wildlife; Dick Norell, Idaho Department of Fish and Game; and Gary Herron, Nevada Department of Wildlife.

WHOOPING CRANE FALLS TO EAGLE

Although many wildlife species are protected under the laws of man, they are not necessarily protected from one another. A six-month old whooping crane (*Grus americana*) making its first migration was apparently attacked in flight and killed by an eagle in Colorado last month.

An examination by the Colorado Division of Wildlife indicated that the whooper received fatal talon wounds from a large raptor, presumed to be a golden eagle (*Aquila chrysaetos*). A party of nine hunters witnessed the

attack and reported that the whooper rose from a pond with two small birds, probably sandhill cranes (*Grus canadensis*), and was struck by a large, dark bird. The hunters retrieved the carcass, noticed it was banded and fitted with a radio transmitter, and turned it over to the State agency.

The whooper was part of an experimental program using sandhill crane foster parents from Gray's Lake National Wildlife Refuge in Idaho in an effort to establish a second migratory population.

BOBCAT EXPORTS TEMPORARILY ENJOINED

Following a suit brought against the Endangered Species Scientific Authority (ESSA) by Defenders of Wildlife, Judge June Green of the U.S. District Court of the District of Columbia has granted a temporary restraining order halting exports of bobcat pelts (taken during 1979-80) from the U.S.

Defenders challenged the action of ESSA (acting as U.S. Scientific Authority for the Convention on International Trade in Endangered Species of Wild Fauna and Flora, or CITES) in finding that the export of the pelts of bobcats (*Lynx rufus*) taken in the 1979-80 season would not be detrimental to the survival of that species, and the action of the Fish and Wildlife Service's Wild-

life Permit Office (acting as U.S. Management Authority for CITES) in issuing export permits "...absent the existence of an adequate management program to ensure that bobcats are not taken in violation of any State or Federal laws."

Under the November 9 order, no further (1979-80) bobcat exports will be allowed until a decision is made on Defenders' request for a temporary injunction, which it believes is warranted until additional supporting data can justify ESSA's export findings. The Court will hear arguments in the case on December 3-5, after which a final decision on the allowability of exports will be made.

BLACK RHINO PROPOSED AS ENDANGERED

The African black rhinoceros (*Diceros bicornis*), hunted extensively for its valuable horn, is proposed for listing by the Service as an Endangered species (F.R. 10/1/79).

Although still the most numerous of the five rhinoceros species occurring in Africa and southeast Asia, the black rhino population may be approaching extinction. Over the last five to eight years, probable losses of black rhinos have been estimated at up to 95 percent in Kenya's Tsavo National Park, 85 percent in Amboseli, and over 90 percent in Meru National Park. Two years ago Meru National Park could have been considered the last stronghold of rhinos in northern Kenya; today, it has less than 20 individuals.

Based on available evidence, the Service believes there are fewer than 1,500 black rhinos in Kenya, less than 10 percent of the numbers only 10 years ago. Fewer than 15,000 black rhinos may remain in all of Africa. There have been marked declines of the species in African parks—70 percent in Ngorongoro, 70–80 percent in Ruaha, 80 percent in Tarangire, and 80–85 percent in Manyara over the last 10 years.

The major reason for the dramatic decline in the species is trade in its parts and products, especially rhino horn. Legal exports of rhino horn from East Africa have quadrupled since 1971 to over 4 tons in 1976. In one importing country, official statistics show that rhino horn imports averaged 7.6 tons per year during 1976 and 1977. A horn typically weighs about 3.5 kilos, or nearly 8 pounds, which means at least 4,000 rhinos were killed in that 2-year period to meet the demand in that country alone.

Illegal poaching has become a lucrative business as prices for rhino horn have jumped from \$23 per kilo in 1969, to \$112 in 1976. Rhino horns are carved into dagger handles which sell for as much as \$6,000. In the Far East, powdered horn is sold for medicinal purposes and as an aphrodisiac, although there is no known scientific basis for these uses. In some markets rhino horn sells for as much as \$350 per ounce.

Another factor that may be contributing to the decline in the species is a low reproductive rate. A female rhinoceros produces only one calf every four years, and the infant may

remain dependent on the mother for two years or more. Also, rhinos are easy to stalk, and the remaining population is showing signs of disturbance in response to harassment by poachers.

Listing the black rhinoceros as Endangered will give added protection to the species, which is listed on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). (The People's Republic of China—one of the world's largest rhino horn markets—recently signed CITES, and will now

actively monitor trade in the species' products.) The Endangered Species Act of 1973 will provide further import prohibitions, as well as restrictions on transportation or sale in interstate or foreign commerce.

Under both the Convention and the Act, permits are available in certain instances for scientific and other specified purposes. However, given the present precarious status of the black rhino, the Service believes that the issuance of permits for the importation of any sport hunting trophies (allowable under CITES under certain conditions), including hardship permits for this purpose, is inconsistent with the conservation of the species and therefore proposes to deny all such applications under the Act.


Comments on this proposed rule were accepted by the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240 through November 30, 1979.



Photo courtesy of Lothar Schlawe

The black rhinoceros, pursued for its valuable horn, has suffered drastic declines in the last decade.

**WARNING
TO DIVERS**



The Manatee is an endangered species. It is fully protected by state and federal laws. Divers and swimmers may observe and enjoy these docile animals only in a manner which does not result in their disturbance.

Divers may:
Observe manatees and take photographs from a distance of at least 100 feet. Do not touch, feed, or harass manatees. Do not use flash photography. Do not use any equipment that could harm or disturb manatees.

Manatees may be:
Observed from a distance of at least 100 feet. Do not touch, feed, or harass manatees. Do not use flash photography. Do not use any equipment that could harm or disturb manatees.

Manatees are:
Protected by state and federal laws. It is illegal to kill, harm, or harass manatees. It is illegal to take or sell manatee parts or products. It is illegal to use manatee parts or products in any way.

Florida Department of Natural Resources

MANATEE PROTECTION AREAS AUTHORIZED

To protect the Florida manatee from boat injuries and other human-related threats, the Service has finalized regulations allowing the establishment of special protection areas for this Endangered marine mammal (F.R. 10/22/79).

Under the new Service ruling (proposed January 23, 1979), two types of protection areas—sanctuaries and refuges—may now be designated where water-related activities need to be restricted or prohibited to prevent injuries to manatees. Upon the establishment of a manatee “refuge,” specified activities likely to harass, injure, or kill a manatee may be limited. (Restrictions may affect boating, swimming, snorkeling, and other water activities.) All waterborne—and possibly other water-related activities would be prohibited in areas designated as “sanctuaries,” where substantial evidence has shown the manatees to be highly vulnerable.

The State of Florida, which passed a Manatee Sanctuary Act in 1978, has already established manatee sanctuaries in 10 counties under similar regulations (now enforceable by both Federal and State agents—see November 1978 BULLETIN). The Florida Marine Patrol also operates a manatee hotline (toll-free 800-342-1821) to report manatee harassment or injuries.

Properly called the West Indian manatee (*Trichechus manatus*), this sirenian has continued to decline in the U.S., where its remaining numbers (estimated at under 1,000) are protected under both the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973.

Manatees occur primarily in Florida's inland and coastal waters (occasionally moving into neighboring States), where they are threatened by human activities, especially the use of motor boats—identified as the major cause of manatee injury and mortality in recent years. (Almost all living manatees bear scars or deformities from boat propellers.) Manatees have also been injured in water control structures and by fishing gear, and may be harassed or unintentionally chased by boaters, scuba divers, snorklers, or swimmers into intolerably cold waters. (The animals are in greatest danger in the winter months, when they congregate near natural warmwater springs and power plant thermal discharges, making them even more vulnerable to boat strikes and harassment.)

Emergency Provision

Under the new procedures, protection areas may be immediately established through emergency ruling upon (1) the publication of such notice in a general circulation newspaper in an affected county, (2) the posting of area boundaries, and (3) the publication—to the extent practicable—of emergency designation in the *Federal Register*. Areas established under emergency provisions will be so designated for 120 days, after which the areas must be protected through standard rulemaking procedures.

PLANTS

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Mauna Kea). Its decline has been attributed to grazing by feral animals, competition with exotic vegetation, and human disturbance.

Berberidaceae (Barberry family):

- *Berberis sonnei*—Known from only two small patches along the Truckee River in California, where it is vulnerable to vandalism, horticultural collecting, and changing land uses, the Truckee barberry has been listed as Endangered (F.R. 11/6/79). This small evergreen shrub, described as “the phantom plant of the Sierras” was the subject of intense searching until its rediscovery in 1973 by a high school biology student in Truckee, California. Originally discovered in the 1880's, it had been “lost” for nearly 90 years. Cuttings have been taken from this stand and the species may be successfully propagated for reintroduction into the wild.

Cactaceae (Cactus family):

- *Ancistrocactus tobuschii*—Found in the Hill Country of central Texas, on the escarpment of the Edwards Plateau, with fewer than 200 remaining specimens, the Tobusch fishhook cactus has been listed as Endangered (F.R. 11/7/79). This cactus is found in an unusual habitat—on the banks of streams and on loose, water-deposited gravel bars, where it has been reduced by flooding and stream bank erosion. (The 100-year flood of August 1978 destroyed one of the two known populations of significance.)

- *Coryphantha minima*—Now confined to a single ranch in Texas, the Nellie cory cactus has been listed by the Service as Endangered (F.R. 11/7/79). This and another listed cactus, the Davis' green pitaya, were known from a single mineral outcrop in northern Brewster County on two large adjacent ranches. *C. minima* was completely extirpated from one ranch during the 1960's when the owner allowed cacti collectors free access to his land. This species is greatly threatened by further taking, and is vulnerable to any alteration of its habitat through range management or mining of its mineral base.

- *Coryphantha ramillosa*—Also native to Texas, the bunched cory cactus—listed by the Service as Threatened—occurs on dry desert lands in two Texas counties overlapping into Mexico (F.R. 11/6/79). *C. ramillosa* is a spherical cactus bearing pinkish to rose-purple colored flowers. Although its range had been considered remote, this species is now threatened by further development which could modify its habitat and make specimens more readily accessible to collectors.

- *Coryphantha sneedii* var. *leei*—Found only in a few populations in Carlsbad Caverns National Park (southeastern New Mexico), the risk of damage to the Lee pincushion cactus from illegal collecting is so great that Threatened classification is warranted (F.R. 10/25/79). A small plant with white spines and pink flowers suffused with brown, this cactus was first discovered in 1924 (and described in 1933), and has also been called *Escobaria leei*. It can be readily cultivated, so that wild populations need not be exploited.

- *Coryphantha sneedii* var. *sneedii*—Occurring in the mountains east of Las Cruces, New Mexico, and north of El Paso, Texas, in the northern Chihuahuan Desert, the Sneed pincushion cactus has been listed as Endangered (F.R. 11/7/79). *C. sneedii* var. *sneedii*, with its many branches forming clumps a foot or more across and bearing small pink to pale rose flowers, has been heavily collected since its discovery in 1921. The plant has also declined from past road construction between Las Cruces and El Paso, while general urban expansion and use of portions of the Organ Mountains on Fort Bliss as an artillery impact area are probable threats to some specimens.

- *Echinocactus horzonthalonius* var. *nicholii*—The Nichols turks head cactus, a native of Arizona now restricted to two adjacent counties, has been listed as Endangered (F.R. 10/26/79). This turks head cactus is blue to yellowish-green, with a single stem, bearing pink flowers and fruits. The plant has been overcollected throughout its range, and its habitat is currently threatened by mining operations, urban development, and ORV use.

- *Echinocereus engelmannii* var. *purpureus*—Occurring in small numbers only in the arid, sandy soil of the Mojave Desert in southwestern Utah, the purple-spined hedgehog cactus has been listed as Endangered (F.R. 10/11/79). This spiny plant usually displays its purplish flowers on a solitary cylindrical spire, although it sometimes forms clumps. This species is widely sought by amateur and professional cactus growers, and its existence is further threatened by urban expansion and ORVs.

- *Echinocereus kuenzleri*—Discovered in 1961 and only described as a unique species in 1976, the Kuenzler hedgehog cactus—listed as Endangered (F.R. 10/26/79)—is found only in one general area on the eastern edge of the Sacramento Mountains in the Central Highlands of New Mexico. Fewer than 200 specimens of this cactus are known in nature, as most of the original population was destroyed

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PLANTS

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by highway maintenance. The species (an unbranched or few-branched plant with cup-shaped, purplish-pink flowers) is now mostly threatened by collectors.

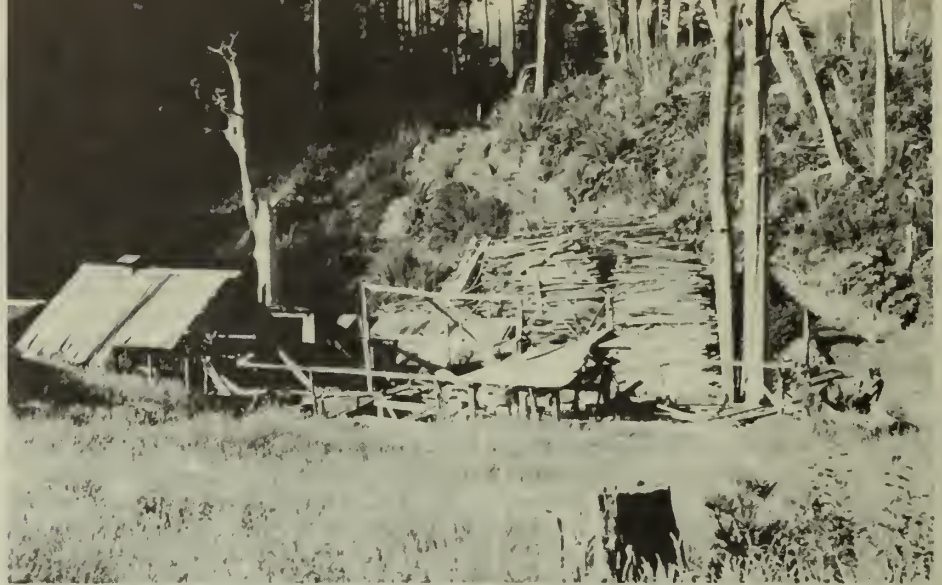
- *Echinocereus lloydii*—Found in only one Texas county, Lloyd's hedgehog cactus has been listed as Endangered (F.R. 10/26/79). This species' range was reduced when a strip of its habitat was destroyed during highway widening. Its numbers have continued to decline primarily due to overcollecting. First collected in 1909, Lloyd's hedgehog usually occurs in clusters, having large beautiful flowers with scarlet petals and greenish-orange fruits.

- *Echinocereus reichenbachii* var. *albertii*—Commonly called the black lace cactus for its dark purple, black-tipped spines, this native Texas plant has been listed as Endangered (F.R. 10/26/79). It has a rose-pink flower, is cylindrical and generally single-stemmed, occurring in the undisturbed brush community of the south Texas coastal bend. The black lace cactus is ecologically interesting because it is adapted for living in this "juncture" community at an extreme edge where no other lace cacti can survive. The plant is threatened by brush clearing for range improvement (known populations have been reduced by 50 percent) as well as overcollecting.

- *Echinocereus triglochidiatus* var. *arizonicus*—Known only from a few locations in the rugged mountainous country of central Arizona, the Arizona hedgehog cactus has been listed as Endangered (F.R. 10/25/79). Remaining individuals (about 1,000) are sought by collectors, attracted by the plant's large, red flowers. In addition to overcollection, this cactus may become threatened by the expansion of copper mining.

- *Echinocereus triglochidiatus* var. *inermis*—The spineless hedgehog cactus, known from four populations in western Colorado and eastern Utah, has been listed as Endangered (F.R. 11/7/79). While the major threat to this cactus is overcollection (cacti enthusiasts are attracted by its scarlet red flowers and its curious spinelessness), remaining individuals may be threatened by future mineral and oil exploration and extraction as well as increased recreational use of the high desert.

- *Echinocereus viridiflorus* var. *davisii*—Davis' green pitaya, found together with the Nellie cory cactus on a single mineral outcrop in Brewster County, Texas, has been listed as Endangered (F.R. 11/7/79). Occurring primarily on two large adjacent ranches, this cactus was extirpated



Abandoned alerce sawmill, Vicente Pérez Rosales National Park, Chile.

Photo by Gary B. Wetterberg, National Park Service

from one ranch in the 1960's, and is now nearly confined to one protected ranch area. Overcollection as well as possible future mineral and oil exploration and extraction threaten its continued existence.

- *Neolloydia mariposensis*—Occurring on dry desert land in one Texas county (and possibly extending into Mexico, as its known range is within one mile of the border), Lloyd's Mariposa cactus has been listed as Threatened (F.R. 11/6/79). Most of the range of this plant (a spherical to egg-shaped cactus with pinkish flowers) is very remote, although future residential development (followed by increased accessibility) could threaten the species.

- *Pediocactus bradyi*—Confined to an area of about 20 square kilometers in one Arizona county, the Brady cactus has been listed as an Endangered species (F.R. 10/26/79). A small semiglobose cactus with usually one stem, *P. bradyi* retracts into the soil during dry, hot periods. It is restricted to a specific soil type, and factors limiting its distribution are not well understood. Populations have been reduced by both highway and powerline construction and maintenance activities, and the use of ORVs on National Park Service land. Overcollection of the species—prized as one of the most desirable ornamental plants—is the major threat to its survival.

- *Pediocactus knowltonii*—The Knowlton cactus, discovered when unearthed by a bulldozer in 1958 and known from only one general location in northeastern New Mexico (and perhaps barely extending into Colorado), has been listed as Endangered (F.R. 10/29/79). Most of the plant's original range was flooded by the Navajo Reservoir. Although readily available in cultivation, the greatest threat to this

small, globular cactus (with pinkish flowers) is overcollecting.

- *Pediocactus peeblesianus* var. *peeblesianus*—A desert species of the Colorado Plateau, the Peebles Navajo cactus (listed as Endangered, F.R. 10/26/79) occurs only in Navajo County, in northern Arizona. This is a small and globular cactus (with yellow to yellow-green flowers) that pulls down underground during the dry season. Although available in cultivation, it is greatly threatened by overcollecting. Road construction has destroyed much of its habitat, and a gravel pit operation poses an additional threat. Only a few hundred individuals of Peebles Navajo cactus are known to remain in nature.

- *Pediocactus sileri*—Listed as Endangered (F.R. 10/26/79), the Siler pincushion cactus occurs in scattered areas along the Utah-Arizona border, where it is restricted to a specific soil type (gypsiferous clays and sands). Small, solitary, and globose, this cactus is prized for its maroon and yellow flowers, and bears greenish-yellow fruits. The species' survival is threatened by gypsum strip-mining operations and ORV use, and Utah populations could be impacted by the Warner Valley Power Project. Some plants have also been lost to grazing, although overcollection is by far the greatest threat to the species.

- *Sclerocactus glaucus*—Found on mesas of the Colorado Plateau of far western Colorado and eastern Utah, the Uinta Basin hookless cactus has been listed as a Threatened species (F.R. 10/11/79). The species is known from only eight sites (mostly on federally-owned land), and numbers about 15,000 individuals. Valued for its magenta-colored flowers, overcollection is the major threat to this otherwise nondescript "ball" cactus (which



Photo by Keith Woolliams

Kokia cookei, the last remaining specimen.

contracts underground to become nearly invisible during long dry seasons). The species may also be threatened by future mineral and oil exploration and increasing recreational use of the high desert.

- *Sclerocactus mesae-verdae*—The Mesa Verde cactus—a grayish-green, globular plant found in southwestern Colorado and northwestern New Mexico (primarily on the Navajo Indian Reservation)—has been listed as Threatened (F.R. 10/30/79). Although known to be difficult to maintain in cultivation because of its unusual and exacting soil requirements, this species is greatly threatened by hobby and commercial collectors. Portions of its habitat have also been damaged by highway construction and ORV activity.

- *Sclerocactus wrightiae*—The Wright fishhook cactus—so named because its spines look like fishhooks—has been listed as Endangered (F.R. 10/11/79). First discovered in 1961, it occurs only at five sites in the Navajoan Desert (in two Utah counties), where its habitat is threatened by mineral exploration, potential industrial use, and ORVs. As with all other cacti, overcollecting poses the most serious direct threat to this species.

Ericaceae (Heath family):

- *Arctostaphylos hookeri* ssp. *ravenii*—Occurring on the U.S. Army's Presidio in San Francisco County, Raven's manzanita has been listed as Endangered (F.R. 10/26/79). Only a single individual of this subspecies is known to remain in the wild, where it is extremely vulnerable to destruction. Competition from nonnative plants also poses a threat to this and other indigenous plants on the Presidio. (Specimens of Raven's manzanita are held by several botanical gardens in the U.S.)

Lamiaceae (Mint family):

- *Haplostachys haplostachya* var. *angustifolia*—This last living representative of an entire genus that was once widespread on the Hawaiian Islands has been listed for protection as Endangered (F.R. 10/30/79). *H. haplostachya* var. *angustifolia* is found together with two other listed species (*Stenogyne angustifolia* var. *angustifolia* and *Lipochaeta venosa*) in a single patch of forest on the "Big Island," within the U.S. Army's Pohakuloa Training Area (on the western flank of Mauna Kea). Extirpation of historic populations of this mint is apparently due to human disturbance as well as the impacts of feral animals and introduced weedy vegetation.

- *Stenogyne angustifolia* var. *angustifolia*—Another member of the mint family, this plant (listed as Endangered, F.R. 10/30/79) also belongs to a genus found only in Hawaii. Fewer than 100 individuals of this variety are known to persist in the wild within the Pohakuloa Training Area, where their existence is threatened by grazing and browsing, human trampling, and exotic weedy plants.

Liliaceae (Lily family):

- *Harperocalis flava*—Known to occur in three locations of the Apalachicola National Forest in Florida's panhandle, Harper's beauty has been listed as Endangered (F.R. 10/2/79). No more than 100 individuals of this species—a perennial herb bearing yellow flowers—are believed to survive, making it very vulnerable to accidental loss. The Forest Service is actively managing two of the lily's known locations to enhance perpetuation of this monotypic genus. However, changes in current land management, vandalism, and overcollection could easily threaten the existence of this species.

Malvaceae (Mallow family):

- *Kokia cookei*—Once native to the Hawaiian Islands, Cooke's kokio has been listed as Endangered (F.R. 10/30/79). The last wild individuals of this species—a small tree with showy red flowers which originally grew in the dry hilly country of western Molokai—died early in this century. Only a single specimen now exists in an arboretum, where it was grown from a branch grafted onto a rootstock of a closely related species. Leaves taken from this last individual have been used to establish tissue cultures of the species, which may eventually lead to successful propagation.

Nyctaginaceae (Four O'Clock family):

- *Mirabilis macfarlanei*—Known from only two populations with a total of 20–25 individual plants, the MacFarlane's four o'clock has been listed as Endangered (F.R. 10/26/79). Occurring in Idaho and Oregon, surviving specimens are within federally-man-

aged lands. However, one population is adjacent to a main hiking trail along the Snake River—recently designated a National Recreation Area, where recreational use is expected to increase. Taking would also pose a serious threat to the species (which has a showy pink flower), considering the critically small number of remaining individuals.

Papaveraceae (Poppy family):

- *Arctomecon humilis*—One of a genus of three species known only from the southwestern U.S., the dwarf bear-poppy of Utah has been listed as Endangered (F.R. 11/6/79). The building of the city of Bloomington, Utah, apparently eliminated about a third of the plant's known habitat, and it is now confined to Washington County. Because of its exacting soil requirements, the species does not survive in cultivation. Collecting for home gardens remains a major threat, however, along with general land development and heavy ORV activity. Strip mining of gypsum deposits and the routing of roads and powerlines through the plant's general habitat also threaten the species.

Foreign Plants

Cupressaceae (Cypress family):

- *Fitzroya cupressoides*—The alerce or Chilean false larch, a long-lived evergreen conifer of southern Chile and southwestern Argentina, has been listed as Threatened (F.R. 11/7/79). Found in lowland and highland areas from Valdivia, Chile, and Lake Nahuel Huapi, Argentina, to a little south of Rio Corcovado in Chile, it is the only species in its genus. The false larch may grow to over 150 feet tall and live over 3,000 years. It has been exploited since 1599 for its wood, which has remarkable durability and resistance to fungal and insect attack. (The tree was nearly eliminated from all accessible sites by 1900.) The species' habitat has also been lost with colonization, involving clearing and burning in one of the most massive and rapid deforestations ever recorded in Latin America until recent times.

Pinaceae (Pine family):

- *Abies guatemalensis*—Also a long-lived evergreen conifer (primarily of the temperate highlands of southwestern Mexico and western Guatemala), the Guatemalan fir or *pinabete* has been listed as a Threatened species (F.R. 11/8/79). This tree may grow to over 130 feet tall, with a trunk diameter of 3 feet, occurring between elevations of 5,500 and 12,000 feet. It has been exploited for its wood and has lost much of its habitat to agriculture since at least the time of the Mayan Empire (prior to 1524). Increasing land use pressures from growing

Continued on page 8

PLANTS

Continued from page 7

human populations continue to take their toll on this tree, which has declined so rapidly in Guatemala since the 1940's that it is in imminent danger of extirpation from the country. The fir's wood has been used locally for lumber, and saplings cut as Christmas trees for local residents. Sheep and other livestock grazing prevents regeneration of the tree, which reproduces poorly in the southern portion of its range. It is also severely attacked by a coleopterian insect.

Listing of these foreign evergreens will supplement protection now afforded them under CITES (both are listed on Appendix I) and the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (both are on its Annex).

Federal Protection

While not prohibiting their direct taking from the wild (when Section 7 is not involved), the Endangered Species Act of 1973 affords protection to listed plants on several other fronts.

Under Service regulations, a permit system has been established to control trade in plants listed under the 1973 Act (as well as under CITES), while generally allowing legitimate commerce in cultivated specimens and seeds—thereby discouraging trade in field-collected plants. (Permit conditions differ with listing categories, purposes of interstate commerce and import/export, and origin of the plant. Kindly consult the June 24, 1977, *Federal Register* for details, or order a copy of Service plant regulations from the Wildlife Permit Office, U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.)

Many listed plants occur on federally-owned or managed lands, afford-

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	33	251	284	3	21	24
Birds	67	145	212	3		3
Reptiles	11	48	59	10		10
Amphibians	5	9	14	2		2
Fishes	29	11	40	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	42		42	5		5
Total	219	467	686	42	21	63

Number of species currently proposed: 161 animals
1,830 plants (approx.)

Number of Critical Habitats listed: 34

Number of Recovery Teams appointed: 66

Number of Recovery Plans approved: 29

Number of Cooperative Agreements signed with States:

31 (fish & wildlife)

1 (plants)

October 31, 1979

ing them extra protection under Endangered Species Act mandates. Section 7 of the law requires all Federal agencies to insure that actions they fund, authorize, or carry out do not jeopardize the continued existence of Endangered or Threatened species or adversely modify or destroy their Critical Habitats. (Moreover, the Act calls upon all Federal agencies to carry out conservation programs for listed animals and plants.)

Because of their extreme vulnerability, the Service has determined that designation of Critical Habitat—and accompanying publication of maps detailing the location of remaining populations—would only serve to jeopardize the recently listed native plants. (Nevertheless, these plant taxa are protected through the jeopardy

provisions of Section 7 of the Act, which may include taking controls.)

Funding is now available to the Service through the Land and Water Conservation Fund program to acquire and protect Endangered and Threatened plant habitat. Also, the Service is now authorized to enter into cooperative agreements with the States for the purpose of furthering plant conservation and protection under the Federal Endangered Species grant-in-aid program. Connecticut recently became the first State to sign such a matching fund agreement with the Service, and many more States are now developing active programs for their protected plants.

For foreign plants, there are measures for international cooperation under Section 8 of the Act.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

Lambertson To Head Endangered Species Program



Ronald E. Lambertson

Ronald E. Lambertson, an Interior Department lawyer serving as the Assistant Solicitor for Fish and Wildlife, has been named by Fish and Wildlife Service Director Greenwalt as the agency's Associate Director for Federal Assistance.

In this position, Lambertson, 38, succeeds Keith M. Schreiner as Endangered Species Program Manager and administrator of the Service's multimillion dollar Federal grant program with the States. (Schreiner is now Area Director for Alaska.)

"With his scientific and legal training, Ron Lambertson is uniquely qualified to guide one of the Service's most sensitive programs," Greenwalt said. "His extensive involvement with endangered species matters makes him a definite asset to the agency, and an effective voice for the resources it serves."

As Associate Director, Lambertson will oversee administration of the Endangered Species Act of 1973, under which our Service is responsible for listing, recovery planning, protection of Critical Habitat, enforcement, land acquisition for listed species, cooperative agreements with the States, and consultation with other Federal agencies on projects that could affect protected species. He will also direct this country's implementation of a 54-nation treaty, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and will oversee the issuance of permits for activities with species listed under both the Act and CITES. Additionally, he will administer the \$110 million Federal aid program for State fish and

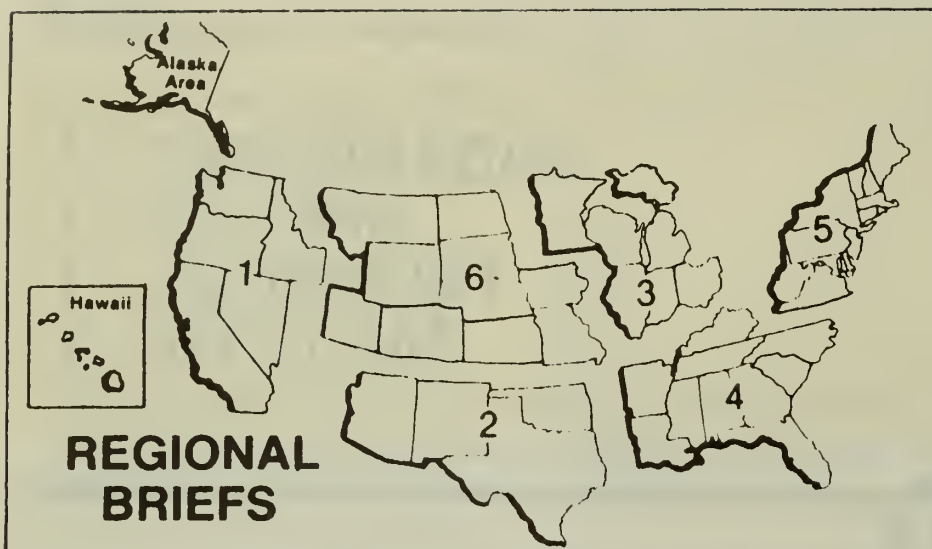
wildlife restoration and enhancement activities.

Receiving his juris doctor from the University of Colorado in 1970 and holding an undergraduate degree in wildlife biology from Colorado State University, Lambertson came to the Interior Department in 1970. He became one of the youngest attorneys ever appointed to the position of Assistant Solicitor in 1974, where he has since served as the Fish and Wildlife Service's chief legal advisor in all aspects of the agency's management programs, particularly endangered species. He helped prepare Interior's legal brief for the Supreme Court in the TVA Tellico Dam case, and has participated on several Service consultation teams. Earlier, he had assisted in the formulation of interagency consultation procedures that were adopted as Section 7 regulations (pre-1978 Amendments), and helped develop Service policy for administering the cooperative agreement program.

In recognition of his "professional adherence to the prospect of a sound environment, his interdisciplinary methodology, and his personal interest in the changing role of the Federal Government," Lambertson received Interior's Meritorious Service Award in 1976.

A native of Adams County Colorado, Lambertson now lives in Silver Spring, Maryland with his wife, Bonnie, and their two daughters.

Deputy Associate Director Harold J. O'Connor had been acting Associate Director-Federal Assistance—with C. Phillip Agee serving as his deputy—since Schreiner's departure last March.



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of November.

Region 1. The first meeting of the newly formed Bald Eagle Recovery Team (Pacific) was held November 8. Five western States and three Federal

agencies were represented.

State and Federal agency comments on the updated California Condor Recovery Plan are being received and evaluated preparatory to submitting the final draft plan to Washington for approval.

A record high 1,700 Aleutian Canada

geese (*Branta canadensis leucopareia*) were observed in Colusa County, California, during November.

Purchase options were signed on two tracts totalling 480 acres of Critical Habitat for the Endangered blunt-nosed leopard lizard (*Crotaphytus silus*) and San Joaquin kit fox (*Vulpes macrotis mutica*) in California's San Joaquin Valley. Negotiation of the options will provide interim protection to this area until acquisition can be accomplished.

Region 2. The land acquisition process has been initiated for Clear Creek, Texas. Acquisition of this area will aid the protection of the Clear Creek gambusia (*Gambusia heterochir*).

All animals in the Mexican wolf (*Canis lupus*) captive breeding program in Tuscon, Arizona, were examined and the males tattooed for identification. Red wolves (*Canis rufus*) at the Point Defiance Zoo in Tacoma, Washington, were paired for the 1980 breeding season. The red wolf status summary has had its final review and will be published as an Endangered Species Report.

Region 3. The regional office hosted a mussel identification workshop attended by approximately 45 people representing five agencies. During the session an identification poster (a joint effort by the Service and the Army Corps of Engineers) for the 48 species of Mississippi River mussels was reviewed and sent back to the contractor for final preparation.

Endangered Species personnel attended a Bald Eagle Recovery Team (Northern States) meeting held in conjunction with the Raptor Research Foundation symposium. They also met with representatives from the Sierra Club and HOWL (Help Our Wolves Live) to discuss a proposed school curriculum on the wolf.

Region 4. The Tennessee Valley Authority, in cooperation with the Service, recently placed gates on three gray bat (*Myotis grisescens*) maternity caves—two in Tennessee and one in Alabama. Human disturbance has reduced the colonies in these caves to a fraction of their former numbers.

On Thursday, November 29, the gates of Tellico Dam were closed and the reservoir began covering the area designated as Critical Habitat for the snail darter (*Percina tanasi*).

Region 5. Plans for next year's Furbish lousewort (*Pedicularis furbishiae*) investigations in northern Maine are near completion. The studies will be funded by the Army Corps of Engineers as part of the Dickey-Lincoln School Lakes power project.

Region 6. A cave-in at Pilot Knob Mine in Missouri last spring has left doubts about the site's suitability as a

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U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Alaska Area:** Alaska.

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hibernaculum for the Endangered Indiana bat (*Myotis sodalis*). Engineers have recommended that the mine, Critical Habitat and formerly hibernaculum for about 30 percent of the species' population, be left undisturbed in hopes that the area will stabilize and once again serve the Indiana bat.

The Greenback Cutthroat Trout Recovery Team met to begin revising the recovery plan.

Meetings were held at Laramie, Wyoming; Provo, Utah; and Huron, South Dakota to identify plant taxa that should be considered for listing. The meetings were attended by Federal, State, and University personnel.

FIRST PLANT RECOVERY PLAN

The Fish and Wildlife Service has awarded a \$5,000 contract to the Wisconsin Department of Natural Resources to prepare a recovery plan for northern wild monkshood (*Aconitum noveboracense*), the first listed plant to be named as the sole subject of a service recovery plan.

State investigators will inspect and classify habitat, identify threats to the species, and interview landowners, scientists, and State endangered species officials. A completed plan is expected by October 1, 1980.

The northern wild monkshood occurs on a few cliff habitats in and about the unglaciated portion of southeastern Wisconsin and north-eastern Iowa. Disjunct populations occur in Ohio and New York.

A member of the buttercup family, this monkshood displays violet flowers from June through September. Little is known about the properties and ecology of this rare species, but the majority of its remaining habitats are in Wisconsin.

CORRECTION

Three names were inadvertently excluded from the announcement of the formation of the Pacific Coast Bald Eagle Recovery Team in the November 1979 BULLETIN. The names are: Barbara Holder, U.S. Forest Service; Karen Steenhof, Bureau of Land Management; and Bob Anthony, Cooperative Wildlife Research Unit, Oregon State University.

CONGRESSIONAL ADD-ON TO KEEP GRANT-IN-AID PROGRAM AFLOAT

More than 30 States will be able to get on with the business of endangered species conservation this year with a little help from Congress and President Carter, who on November 27 approved an additional \$2 million to boost the Endangered Species Grant-in-Aid Program with the States through Fiscal 1980.

As of December 6, 1979, 33 States had entered into cooperative agreements with our Service, entitling them to at least 66-2/3 matching fund assistance for surveys, research, enforcement, and other activities benefitting their rarest resident species. Many of these States joined the grant-in-aid program only recently, following the relaxation of eligibility requirements for the program (along with the December 19, 1977, reauthorization of appropriations under Section 6 of the Endangered Species Act) and the provision for cooperative agreements to protect plants (accompanying the November 10, 1978, amendments to the Act)—see January 1978 and October 1978 BULLETINS.

Eleven States have entered the grant program this year under recently finalized Service regulations permitting their participation even when they are not empowered to manage all listed species resident in the State (see June 1979 BULLETIN).

[The 1973 Act essentially required States to have adequate authority in areas such as law enforcement, research, and habitat acquisition, as well as active programs for the conservation of their resident, *federally-listed* Endangered and Threatened wildlife to qualify for the agreements. As mandated under both the 1977 and 1978 amendments, however, Service regulations now provide for matching fund assistance to any State meeting certain criteria and having plans "under which immediate attention will be given to those resident species of fish and wildlife or plants which are determined by the Secretary and the State agency to be endangered or threatened and which the Secretary and the State agency agree are most in need of conservation programs . . . (emphasis added)."]

Several new agreements have also been signed for plant conservation—two (California and Washington) supplementing existing wildlife agreements, and another (Connecticut) exclusively for plants.

Program History and Accomplishments

In fashioning the Endangered Spe-

cies Act, Congress incorporated cooperative agreement provisions to allow qualifying States to retain and strengthen their traditional wildlife management roles. This was done out of recognition that the States want to assist in the restoration of their own endangered species and are in many cases more familiar with the conservation needs and biological status of their resident wildlife and plants—and those species that may be headed for trouble—than the Federal Government.

The Endangered Species Grant-in-Aid Program was put in motion only in 1976, when 16 States signed up for Federal matching fund assistance. While at that time a few States had developed active endangered species programs, most were newcomers to the concept of endangered species protection and recovery planning.

Today, most of the States and territories are active in researching, protecting, managing, and publicizing the plight of their endangered wildlife and plants, with much of their data gathering and other research being carried out by specialists at colleges and universities. Among the most significant achievements has been the protection of vital endangered species habitat through State land acquisition. (Seventeen essential areas in five States have been purchased or are now planned for acquisition to benefit 11 protected species.) Under the grant program, most States have undertaken substantial recovery programs for federally listed and/or resident species, many of which have been featured in previous BULLETINS. While space will not permit us to summarize State activities, here is a sampling of accomplishments at the close of FY 1979:

- Florida panther (*Felis concolor coryi*)—one population is now known in Collier County, Florida; there are 547 confirmed records, with cats travelling as much as 100 miles from home territory.

- Indiana bat (*Myotis sodalis*)—Bats were located and counted during the winter in four caves in Missouri, three in Arkansas, and one in New York. Some caves have been protected by gating.

- Ozark big-eared bat (*Plecotus townsendii ingens*)—once thought to be almost extinct, 180 have been found in two Arkansas caves.

- Bald eagle (*Haliaeetus leucocephalus*)—In 1978, 440 active nests were located in five States (Maine, Florida, Maryland, California, and Michigan),

Continued on page 4

Congressional Add-on

Continued from page 3

223 of which produced 335 young eagles; 8 captive-reared birds were introduced to the wild; winter counts were completed in Maine, New York, and Colorado; many of the nest sites and winter roosts are protected.

- Peregrine falcon (*Falco peregrinus anatum*)—23 active nests have been located and protected; reproduction was augmented at 6 nests result-

ing in 16 fledglings; 25 captive-reared birds were introduced to the wild through hacking programs; 114 potential eyries were located.

- American crocodile (*Crocodylus acutus*)—Five nests were found on Key Largo, Florida and 20 animals sighted.

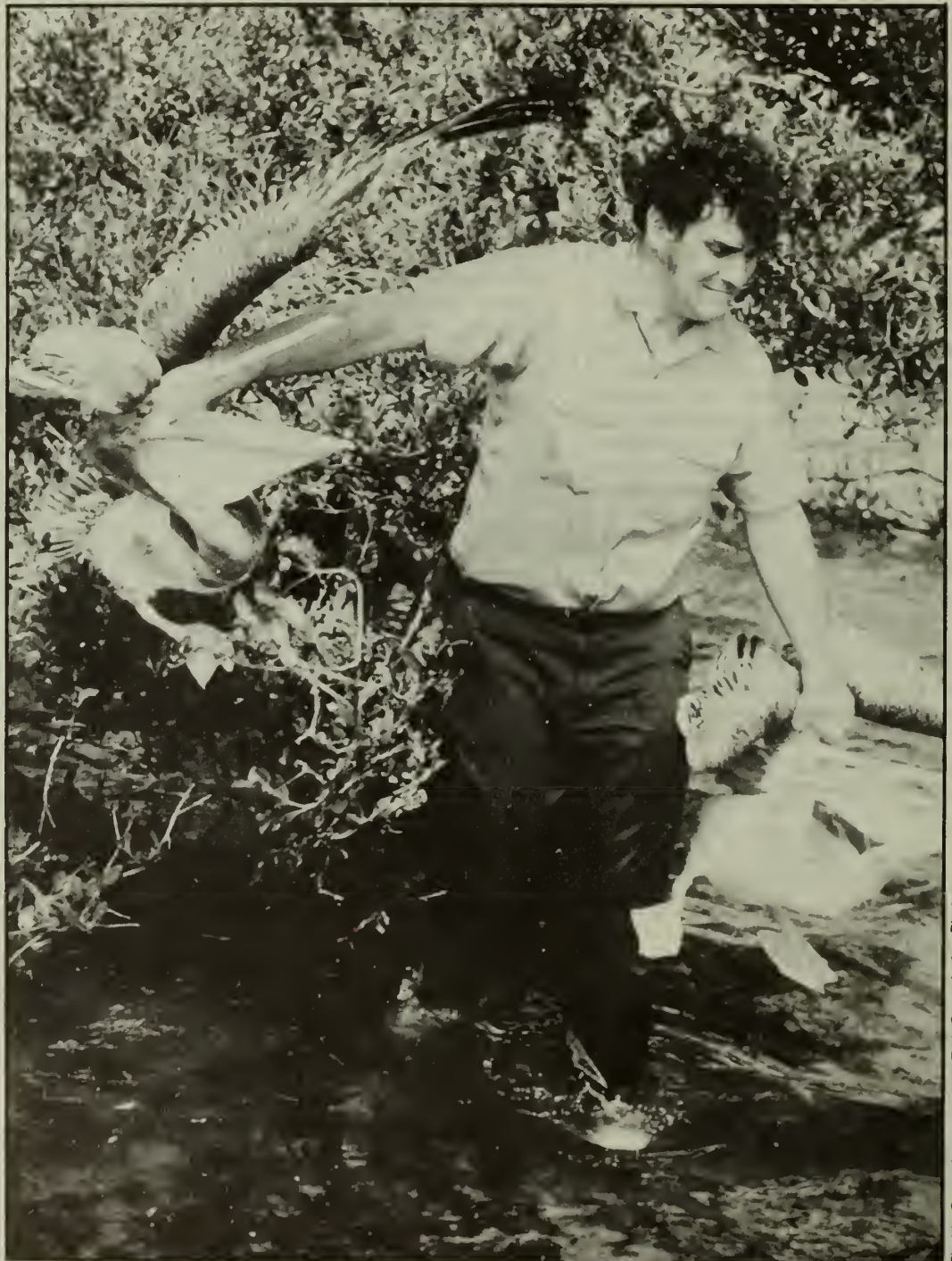
- Owens River pupfish (*Cyprinodon radiosus*)—This species has been found in only three California springs in which habitats are fully utilized; two additional areas are considered suitable for transplants.

- Unarmored threespine stickleback (*Gasterosteus aculeatus williamsonii*)—Three new populations have been located in California; 100 specimens were transplanted to new habitat; predatory African clawed frogs (*Xenopus laevis*) are being eliminated.

Funding and Future Needs

Initially, only a handful of States qualified for (or were interested in) matching fund assistance, so only a fraction of available Federal aid funds were used. But in the last couple of

Under a cooperative agreement with the Service, Florida ships about 100 brown pelicans annually to Louisiana in an attempt to restore the species to this portion of its former range. The states are cooperatively monitoring the bird's progress and limiting factors on the newly established colonies in Louisiana.



Florida Game & Fresh Water Fish Commission Photo

years, as States have further developed their conservation capabilities and their programs have grown, available funds have barely met State needs.

Since fiscal 1976, some \$16 million has been allocated to 22 States for work on over 128 resident endangered species. Allocations of \$1.6 million in grant-in-aid were made in fiscal 1977 to 16 States. But in fiscal 1978, \$5.7 million was apportioned to 22 eligible States—representing a \$4 million appropriation and \$1.7 million of available carryover funds that had accumulated early in the program. In fiscal 1979, only \$3 million was appropriated, but \$5.8 million was allocated to 22 States. (This allocation exhausted the remaining carry-over funds.)

To maintain State cooperative projects at "1979" levels in fiscal 1980, more than \$5 million was needed. The additional \$2 million added by Congress to the Service's \$3 million budget request will help keep ongoing programs up to speed (although many States will have to confine spending to

high priority efforts), and should provide minimum support to new participants (no more than \$30,000 each) to get their programs going.

A number of States (as well as Puerto Rico, Guam, and the Virgin Islands) are expected to sign cooperative agreements this year, putting additional stresses on the Service budget. As many as 46 States may be eligible for and anticipating grant-in-aid assistance by FY 1981.

As provided under the 1977 reauthorization for Section 6, appropriations for grant-in-aid for FY 1981 will be limited to \$4 million*, unless Congress opts this year to authorize and appropriate a bonus amount to keep State programs on their feet. A renewed appropriations authorization would also be necessary to apportion Section 6 matching funds after September 30, 1981.

* P.L. 95-212 authorized the appropriation of up to \$16 million for FY 1978 through FY 1981, of which \$12 million has been appropriated to date.

Plant correction

Within the November 1979 feature on plant listings, our page 6 description of the Knowlton cactus (*Pediocactus knowltonii*) should have indicated its distribution only in one general location in *north-western* rather than *northeastern* New Mexico. . .

New Publications

The Wild Canid Survival and Research Center is making available the proceedings of *Wildlife Survival: The Second Symposium on Endangered North American Wildlife and Habitat* held in St. Louis in 1977. Papers and panel discussions cover habitat, translocation and reintroduction, preservation in captivity, scientific assessment, education, media, corporate involvement, legislation and legal action, and activism. Copies are available for \$6.85. Write to Bill Malloy, Wolf Sanctuary, P.O. Box 20528, St. Louis, Missouri 63139.

Copies of the pamphlet, *Endangered and Nongame Species Program in New Jersey* are available, in limited quantities, from the New Jersey Division of Fish, Game, and Wildlife, Box 1809, Trenton, New Jersey 08625. A \$1.00 donation would be appreciated.

Administration of the Marine Mammal Protection Act of 1972, a Fish and Wildlife annual report to Congress, contains status reports on the polar bear, dugong, marine and sea otters, Atlantic and Pacific walruses, and three species of manatee covering the period from April 1, 1978, to March 31, 1979. The Fish and Wildlife Service and the Commerce Department's National Marine Fisheries Service share jurisdiction for protection of marine mammals, with our service responsible for the nine species in the report.

Single copies may be obtained by writing the Director (OWA), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

COOPERATIVE AGREEMENT PROGRAMS

State	Total Allocation*	Type	
		Animal	Plant
Alaska		X	
Arkansas	\$ 260,700	X	
California	\$4,279,000	X	X
Colorado	\$2,815,100	X	
Connecticut		X	X
Delaware	\$ 40,300	X	
Florida	\$ 815,100	X	
Georgia	\$ 671,800	X	
Idaho		X	
Illinois		X	
Iowa		X	
Kansas		X	
Maine	\$ 20,000	X	
Maryland	\$ 552,500	X	
Massachusetts		X	
Michigan	\$ 960,000	X	
Missouri	\$ 316,600	X	
Montana		X	
Nebraska	\$ 75,300	X	
Nevada		X	
New Hampshire		X	
New Jersey	\$ 845,200	X	
New Mexico	\$ 64,300	X	
New York	\$1,161,100	X	
North Carolina	\$ 762,000	X	
Pennsylvania	\$ 417,400	X	
South Carolina	\$ 410,500	X	
South Dakota	\$ 165,700	X	
Tennessee	\$ 422,600	X	
Utah		X	
Virginia	\$ 163,800	X	
Washington	\$ 390,700	X	X
Wisconsin	\$ 358,900	X	

* Matching funds allocated from inception of program through 12/6/79.



U.S. Fish and Wildlife Service

RESTORATION OF DELMARVA FOX SQUIRREL PLANNED

A plan to restore the Delmarva Peninsula fox squirrel (*Sciurus niger cinereus*) throughout its historic range has been approved by the Fish and Wildlife Service. According to the recovery plan, maintenance of the present range along with the addition of 10 new colonies of fox squirrels outside that range could allow the species to be downgraded from Endangered to Threatened status. The addition of 20 colonies (in addition to the previously mentioned 10) would result in a complete delisting.

Currently, the Delmarva fox squirrel is known in only four Eastern Shore counties of Maryland and one location in Accomac County, Virginia. Though never as abundant as the gray squirrel (*Sciurus carolinensis*), the Delmarva fox squirrel was formerly found in southeastern Pennsylvania, Delaware, New Jersey, and probably the Virginia portion of the Delmarva Peninsula. Changing habitat brought about the decline in this subspecies' distribution.

The Delmarva fox squirrel is found mostly in mixed stands of hardwoods, often with loblolly pines, and is restricted generally to groves of trees along streams and bays and in small woodlots. Delmarva fox squirrels almost always occur with the gray squirrel. Because of the preponderance of loblolly pines in the squirrel's present range, and the fact that loblolly pine seeds are eaten by Delmarva fox squirrels, many people assume they are a necessary part of fox squirrel habitat. However, much of the former range of this subspecies was north of the present distribution of loblolly pines.

Delmarva fox squirrels may weigh as much as two pounds or more, making them subject to prey only from the largest raptors, foxes, and dogs. Some are killed by hunters who mistake them for grays. These shootings are thought to have a negligible effect on the population numbers.

The recovery plan calls for a coop-

erative program with our Service, and the States of Maryland, Virginia, Pennsylvania, and Delaware using basic management practices to 1) protect existing habitat by planned forest cutting and prevention of excessive understory development, 2) assure adequate dens by protection of den trees or placement of nesting boxes, 3) reduce competition from gray squirrels and other animals, 4) protect the Delmarva fox squirrel from hunting, poaching, and predation, and 5) provide an adequate and dependable food supply.

Delmarva fox squirrels respond positively to management. They are not disturbed by human activities any more than gray squirrels, provided their habitat is left intact. Fox squirrels are often the squirrels of cities and towns, or parks and cemeteries in the Midwest. They can be disturbed in their nests and handled with few ill effects. Females move the young to another nest if disturbed, but will not abandon them.



National Audubon Society

CONDOR PROGRAM FUNDED

The long-term program to restore the critically Endangered California condor (*Gymnogyps californianus*)—one of the most expensive efforts ever under-

taken for a listed species—will soon be underway with funds specially approved by Congress.

In signing P.L. 96-126, President Carter authorized a \$500,000 appropriation making possible full-scale research, captive propagation, and habitat protection for the condor involving Federal, State, and private agencies (see our *Special Report*—May 1979 BULLETIN).

Interior Secretary Andrus and Russell Peterson, president of the National Audubon Society, were joined by officials of the California Department of Fish and Game, the Bureau of Land Management, and our Service on December 17 in a ceremony initiating the multiagency cooperative rescue program. (The signing ceremony will be featured in the January 1980 BULLETIN.)

Rulemaking Actions

November 1979

COMMENT PERIOD REOPENED ON RED-BELLIED TURTLE CRITICAL HABITAT

The Service has reopened the comment period and will hold an additional public meeting and hearing on the re-proposal of Critical Habitat for the Plymouth red-bellied turtle (*Chrysemys rubriventris bangsi*). The comment period will be reopened, and comments accepted, between January 10 and February 15, 1980. The public meeting will be held on January 15, 1980, and

the hearing on January 29, 1980, (both from 7:00 to 9:00 pm) in the Myles Standish Room, second floor of the Plymouth Memorial Hall, 83 Court Street, Plymouth, Massachusetts.

This action is being taken subsequent to a public request (in response to the September 29, 1979, reproposal) for an additional meeting and hearing during evening hours.

FIVE FOREIGN REPTILES PROPOSED AS ENDANGERED

Two snakes and three lizards subjected to habitat destruction, competition, overcollection, and malicious killing on the foreign islands where they occur have been proposed by the Service for Endangered classification (F.R. 11/2/79).

The two boas (*Bolyeria multicastrinata* and *Casarea dussumieri*) occur only on Round Island near Mauritius, where they are the sole surviving members of the subfamily Bolyerinae, a group of primitive boas. There have been only six sightings of *B. multicastrinata* since 1935, the last in 1975. The total population of *C. dussumieri* is thought to number 75 animals. Severe erosion has occurred on the island following the destruction of vegetation by introduced rabbits and goats, and the resulting deterioration of the palm forest is considered the main factor in the decline of these snakes. (Both are now protected under Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.)

The San Esteban Island chuckwalla (*Sauromalus varius*) occurs only on the 43 square kilometer San Esteban Island in the Gulf of California, where it

is confined mainly to a single arroyo. Overcollection for the commercial pet trade has been the primary threat to this large iguanid lizard, which is also vulnerable to increasing habitat destruction within its limited range. (The chuckwalla was the subject of a March 6, 1979, notice of review following receipt of a petition for listing from Dr. Ted Case—see March 1979 BULLETIN.)

The Fiji Island banded iguana (*Brachylophus fasciatus*) and Fiji iguana (*Brachylophus* sp.) are found only in the Pacific—the banded iguana on several islands in Fiji and Tonga and the recently discovered (but as yet undescribed) Fiji iguana only on a remote Fiji island. Deforestation and grazing by introduced goats are threatening the habitat of these species. With their attractive coloration and limited range, the threat of commercial exploitation is especially serious. Taking by native islanders and predation by cats have also contributed to their decline.

Comments on the Service proposal should be received by the Director (OES), U.S. Fish and Wildlife Service, no later than January 31, 1980.

RED LECHWE PROPOSED FOR RECLASSIFICATION

Following a review of the status of the red lechwe (*Kobus lechwe*)—an African antelope now listed as Endangered—the Service has determined that its reclassification to Threatened status may be warranted (F.R. 11/27/79).

Safari Club International petitioned the Service to remove both the red lechwe and the argali (*Ovis ammon hodgsoni*) from protection under the Endangered Species Act of 1973. The Service subsequently published a notice of review (F.R. 4/19/78) seeking additional information on the status of these two species as well as the Bon-tebok antelope (*Damaliscus dorcas dorcas*) and 62 other listed species.

Three separate subspecies of red lechwe—the red lechwe proper (*K.l. lechwe*), the black lechwe (*K.l. smithemani*), and the Kafue lechwe (*K.l. kafuensis*)—occur in parts of Namibia, Botswana, Angola, Zambia and southern Zaire. All have declined in numbers since early in this century. The nominate race has always had the most extensive distribution, and is now generally common and widespread. (Red lechwe populations are believed stable, with their numbers now estimated at 150,000.)

Lechwes live along the fringes of swamps or rivers, or on inundated flood plains, spending much of their day in shallow water. Much of the once extensive habitat of the lechwe has been destroyed by inundation from the construction of dams and reservoirs, or has been damaged by prolonged drought or the disappearance of streams due to adverse land use practices.

Although the Service believes that the lechwe may not now be Endangered, it is felt that the species does qualify

for threatened status. There are still thousands of square miles of wetland habitat remaining, but the continuing development of the African nations over the next decade will undoubtedly result in the loss of much that remains, constituting a threat to the species. (Subsistence hunting has also been a major factor in the general decline of the species.)

Due to its recently improved status, the lechwe was recently transferred from the more restrictive Appendix I to Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), lifting some restrictions on trade in the species.

With regard to the argali and Bontebok antelope, the Service has deter-

mined that available data do not justify consideration of a reclassification under the Endangered Species Act at this time.

Comments in response to the reclassification proposal should be submitted to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240, no later than February 25, 1980.



Lothar Schlowe

The total population of the Bontebok—a horned Antelope similar in size to the Lechwe—was estimated to be fewer than 1,000. Bontebok National Park contains over 250 animals, an increase from the 17 present in 1931 when the National Park was proclaimed.

TWO BATS PROTECTED AS ENDANGERED

The Service has listed the Virginia and Ozark big-eared bats (*Plecotus townsendii virginianus* and *P.t. ingens*) as Endangered and, in an effort to curb the threat of human disturbance, has designated five caves as Critical Habitat for the Virginia big-eared bat (F.R. 11/30/79).

Both of these species are restricted to relatively small areas where they require specific conditions for hibernation and reproductive activity. They are highly intolerant of human presence, and have been known to readily abandon their roosts when disturbed by spelunkers, vandals, and even well-meaning biologists.

Virginia big-ear

The Virginia big-eared bat is still found in three separate populations centered in eastern Kentucky, southwestern Virginia, and eastern West Virginia, but many caves within this region have been abandoned. Although as many as 3,000 bats may remain in West Virginia, only three nursery colony caves are known in the State, making the entire population subject to extermination under adverse conditions. A serious decline has also occurred in the single known nursery colony in Kentucky, which contains less than 500 bats. Not more than a few hundred individuals survive in the Virginia population.

While six caves had been considered for designation as Critical Habitat for this species in the Service's original proposal (F.R. 11/2/77), the Service has determined that only five caves in West Virginia are suitable for designation as Critical Habitat at this time. The Service has opted to exclude from its determination the sixth cave located in Kentucky (at the request of the Kentucky Department of Fish and Wildlife Resources), as in this instance a formal designation would call attention to the area, increasing public use and disturbance to the bats. (Only five caves were included in the Service's 10/30/79 reproposal of Critical Habitat, bringing the initial proposal in line with 1978 amendments to the Endangered Species Act.)

Any action (such as blasting, construction, or increased human access) which would substantially alter the physical structure, temperature, humidity, or air flow of the designated caves could adversely modify Critical Habitat

since the Virginia big-eared bat depends on the maintenance of precise conditions for hibernating sites in the winter and for nurseries in the summer.

Ozark big-ear

Recent estimates indicate that the total population of Ozark big-eared bats may be down to 100-200 individuals. Found in only a few caves in

northwestern Arkansas, southwestern Missouri, and eastern Oklahoma, this species is exceptionally vulnerable.

The few survivors are not known to make periodic use of any particular cave for hibernation or maternity purposes, appearing at entirely different sites in subsequent years. (Designation of Critical Habitat has therefore been determined imprudent for this bat species.)

DESIGNATED CRITICAL HABITATS

The following table indicates all listed species for which Critical Habitat has been designated (exclusive of designations made by the Nation)

Common Name	Scientific Name	C. H. Determined	Affected States (Areas)
Bat, Indiana	<i>Myotis sodalis</i>	F.R. 9/24/76*	IL, IN, KY, MO, TN, WV
Bat, Virginia big-eared	<i>Plecotus townsendii virginianus</i>	F.R. 11/30/79	WV
Manatee, Florida	<i>Trichechus manatus</i>	F.R. 9/24/76*	FL
Rat, Morro Bay kangaroo	<i>Dipodomys heermanni morroensis</i>	F.R. 8/11/77	CA
Wolf, gray	<i>Canis lupus</i>	F.R. 3/9/78	MI, MN
Blackbird, yellow-shouldered	<i>Agelaius xanthomus</i>	F.R. 11/19/76	PR
Condor, California	<i>Gymnogyps californianus</i>	F.R. 9/24/76*	CA
Crane, Mississippi sandhill	<i>Grus canadensis pulla</i>	F.R. 8/8/77	MS
Crane, whooping	<i>Grus americana</i>	F.R. 5/15/78	CO, ID, KS, NE, NM, OK, TX
Falcon, American peregrine	<i>Falco peregrinus anatum</i>	F.R. 8/11/77	CA
Kite, Everglade	<i>Rostrhamus sociabilis</i>	F.R. 8/11/77	FL
Palila	<i>Psittirostra bailleui</i>	F.R. 8/11/77	HI
Sparrow, Cape Sable	<i>Ammospiza maritima mirabilis</i>	F.R. 8/11/77	FL
Sparrow, dusky seaside	<i>Ammospiza maritima nigrescens</i>	F.R. 8/11/77	FL
Cavefish, Alabama	<i>Speoplatyrhinus poulsoni</i>	F.R. 9/9/77	AL
Chub, slender	<i>Hybopsis cahnii</i>	F.R. 9/9/77	TN, VA

Pitcher Plant Meeting Scheduled

A public meeting has been scheduled for February 7, 1980, at Gadsden, Alabama, regarding the listing of *Sarracenia oreophila*, better known as the green pitcher plant, as an Endangered species. The effective date of the final rulemaking is being re-extended from February 22, 1980, to April 7, 1980, to allow adequate time to prepare for the public meeting, and to provide for a subsequent 60-day waiting period following the meeting.

Bobcat Exports Halted from Several States

Subsequent to a suit filed by Defenders of Wildlife, Judge June Green of the U.S. District Court of the District of Columbia has ordered exports of bobcat pelts taken during the 1979-80 season halted from seven States, or portions thereof.

The court had granted a temporary restraining order—essentially banning bobcat exports until the case was argued—after Defenders challenged the Endangered Species Scientific Authority's (ESSA) action in finding that exports would not be detrimental to the bobcat's (*Lynx rufus*) survival as well as our Service's action in issuing export permits in the absence of an "adequate management program" (see November 1979 BULLETIN).

In her December 12 order, Judge Green dismissed the complaint with regard to the Navajo Nation and 28 States (from which exports remain lawful). However, mostly due to the lack of adequate biological data and/or State controls, or evidence of population declines, the court prohibited ESSA and the Service from allowing exports of 1979-80 bobcat pelts from Florida, Massachusetts, New Mexico, North Dakota, South Dakota and Wisconsin, as well as from the eastern region of Oregon, (inhabited primarily by the subspecies *pallascens*) and the high plains ecological area of Texas (roughly corresponding to the range of subspecies *baileyi*).

All State fish and game agencies are being notified so that affected managers and trappers may be aware of the order.

Defenders has indicated its intent to appeal the decision, with a request that all bobcat exports be enjoined for the 1979-80 season.

Marine Fisheries Service) through November 30, 1979. The BULLETIN will attempt to publish an updated table each December.

Common Name	Scientific Name	C. H. Determined	Affected States (Areas)
Chub, spotfin	<i>Hybopsis monacha</i>	F.R. 9/9/77	VA, TN, NC
Darter, leopard	<i>Percina pantherina</i>	F.R. 1/27/78	AK, OK
Darter, slackwater	<i>Etheostoma boschungii</i>	F.R. 9/9/77	AL, TN
Darter, snail	<i>Percina tanasi</i>	F.R. 4/1/76*	TN
Madtom, yellowfin	<i>Noturus flavipinnis</i>	F.R. 9/9/77	TN, VA
Trout, little kern golden	<i>Salmo aguabonita whitei</i>	F.R. 4/13/78	CA
Anole, giant	<i>Anolis roosevelti</i>	F.R. 7/21/77	PR
Boa, Mona	<i>Epicrates monensis monensis</i>	F.R. 2/3/78	PR
Coqui, golden	<i>Eleutherodactylus jasperi</i>	F.R. 11/11/77	PR
Crocodile, American	<i>Crocodylus acutus</i>	F.R. 9/24/76*	FL
Iguana, Mona ground	<i>Cyclura stejnegeri</i>	F.R. 2/3/78	PR
Lizard, St. Croix ground	<i>Ameiva polops</i>	F.R. 6/3/77*	Virgin Islands
Rattlesnake, New Mexican ridge-nosed	<i>Crotalus willardi obscurus</i>	F.R. 8/4/78	NM
Toad, Houston	<i>Bufo houstonensis</i>	F.R. 1/31/78	TN
Treefrog, Pine Barrens	<i>Hyla andersonii</i>	F.R. 11/11/77	FL
Turtle, leatherback sea	<i>Dermochelys coriacea</i>	F.R. 9/26/78	Virgin Islands
Antioch Dunes evening-primrose	<i>Oenothera deltoides ssp. howellii</i>	F.R. 8/31/78	CA
Contra Costa wallflower	<i>Erysimum capitatum var. angustatum</i>	F.R. 8/31/78	CA

* C.H. update/correction F.R. 8/11/77



SEA TURTLE CONSERVATION ADDRESSED AT WORLD MEETING

Biologists, conservationists, and government officials representing 40 nations gathered in Washington November 26-30 for the first World Conference on Sea Turtle Conservation.

Sponsored by the World Wildlife Fund-U.S., Fish and Wildlife Service, National Marine Fisheries Service, and several conservation organizations, the Conference assembled more than 350 participants for presentations on sea turtle biology, threats to all seven declining species of sea turtles, and their worldwide status. (Papers were presented on such topics as nesting ecology and behavior; reproductive physiology; nutrition, metabolism, and growth; population dynamics; incidental catch and the development of excluder panels; subsistence hunting; international trade and enforcement problems; habitat alteration and pro-

tection; regional status; and aquaculture and headstarting.)

In fulfillment of its primary goal, the Conference Scientific Committee drafted a Sea Turtle Conservation Strategy, the purpose of which is "to develop conservation action based on the biology of the species that will return sea turtles to former abundance while allowing controlled exploitation for the benefit of generations of humans yet to come."

The document identifies major threats to the turtles, and sets forth policy considerations for conservation in the areas of habitat protection, management, control of exploitation,

incidental catch, education, legislation, and cooperative conservation efforts. A list of action projects complements the strategy plan, which is to be monitored and implemented by a standing committee. Copies of the final strategy paper and project list will be available in English, French, and Spanish the end of February from World Wildlife Fund-International, Avenue du Mont Blanc, CH-1196, Gland, Switzerland (or from IUCN at the same address).

The cost and availability of the Conference proceedings—to be published by late summer 1980—will be announced.

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	35	251	286	3	21	24
Birds	67	145	212	3		3
Reptiles	11	48	59	10		10
Amphibians	5	9	14	2		2
Fishes	29	11	40	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	49		42	7	2	5
Total	228	467	695	44	23	67

Number of species currently proposed: 166 animals
1,850 plants (approx.)

Number of Critical Habitats listed: 35

Number of Recovery Teams appointed: 66

Number of Recovery Plans approved: 30

Number of Cooperative Agreements signed with States:
32 (fish & wildlife)
3 (plants)

November 30, 1979



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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- Abbreviations:
E=Endangered
T=Threatened
C.H.=Critical Habitat
S/A=Similarity of Appearance



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES TECHNICAL BULLETIN

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ENDANGERED SPECIES ACT EXTENDED AND AMENDED

New Scientific Authority and Commission Among New Provisions

On December 28, 1979, President Carter signed into law, for the second consecutive year, substantial amendments to the Endangered Species Act of 1973. Pointing to reauthorization of the Act (for a 3-year period) as one of his highest legislative priorities, the President also approved revisions to the listing, Section 7 consultation, and exemption provisions under the Act, and—perhaps most significantly—the

creation of a new commission to advise on scientific policy under the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Calling the Act "one of the most far-reaching and progressive laws ever enacted by any nation to protect wildlife and plant resources," the President said, "I look forward to and will continue to support the implementation of a vigorous endangered species program."

Listing and related provisions

Among other things, Public Law

96-159, in the words of President Carter, "strengthens our endangered species protection program by including plant as well as animal species in the emergency listing and international cooperation provisions."

Other revisions follow:

- A summary of proposed regulations (rather than the complete text) and, where applicable, a map of the proposed Critical Habitat, must be published in local newspapers within or adjacent to the habitat.

- Public meetings and hearings on

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SERVICE WITHDRAWS PROPOSALS TO LIST 1,876 SPECIES

In line with 1978 Amendments to the Endangered Species Act, the Service has published a notice of withdrawal of five expired proposals to list as Endangered or Threatened 1,876 plants and animals (F.R. 12/10/79).

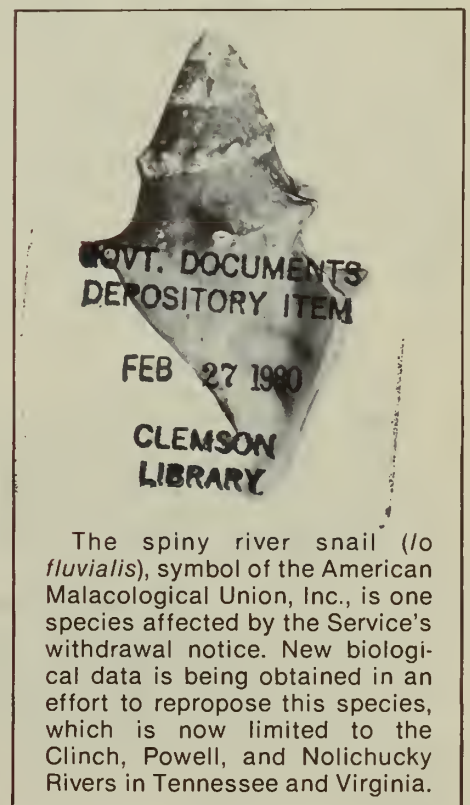
As enacted on November 10, 1978, Section 4(f)(5) of Public Law 95-632 requires the Service to officially withdraw all outstanding listing proposals not finalized within two years of their first publication in the *Federal Register*. The amended legislation authorized a one-year grace period following its enactment before affected proposals must be dropped, however, thus mandating the withdrawal of pending proposals published prior to November 10, 1977, (see October 1978 BULLETIN).

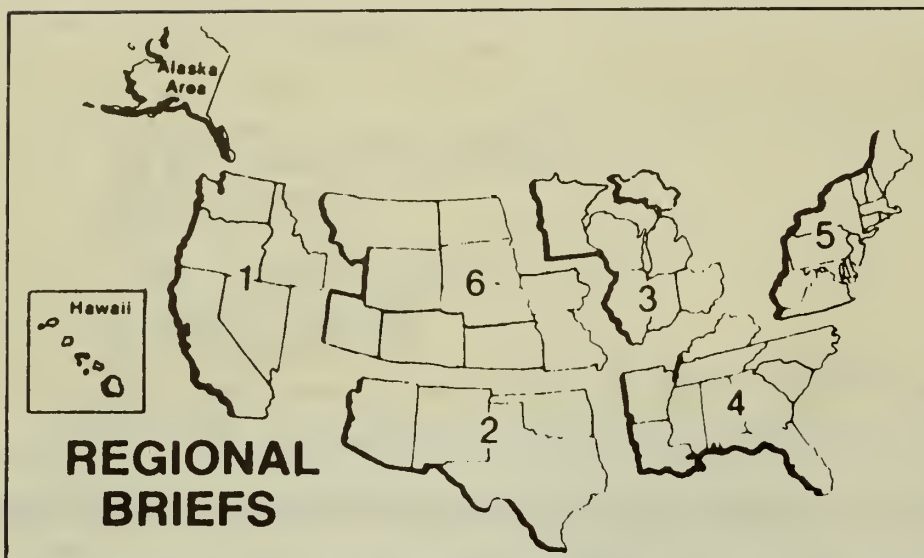
Most of the proposed species affected by the withdrawal (some 1,726)

are native plants, while another 87 foreign plants and 63 invertebrates had to be dropped from immediate listing consideration. Affected proposals—including species ranging in portions of 46 States and some 27 foreign countries—are as follows:

Proposed rule	
Proposed Endangered status for 216 species appearing on Convention on International Trade	Sept. 26, 1975
Proposed Endangered or Threatened status for 32 U.S. snails	Apr. 26, 1976
Proposal to determine 2 birds, 1 lizard, 3 snails, and 1 insect, all indigenous to the	

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REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of December.

Region 1. The final report on the 'Ewa Botanical Survey of Threatened and Endangered Plants (Hawaii) has

been published. Questions on availability should be directed to the regional office.

A contract has been completed for a status report on Washington's Threatened and Endangered plants.

Region 2. Clear Creek Dam has been rebuilt to protect the Clear Creek gambusia (*Gambusia heterochir*). The dam had been deteriorating and it was feared that a washout would destroy the species.

Region 3. Regional personnel briefed Senator David F. Durenberger's staff on the status of the gray wolf (*Canis lupus*) in northern Minnesota.

Region 4 and 5. The Columbia Dam Coordinating Committee, set up to provide guidance for the Tennessee Valley Authority in implementing the the Columbia Dam Biological Opinion and insuring the continued existence of Endangered mussels, met to discuss the group's goals and aspects of the dam project and the biological opinion.

Region 6. In 1979, 57 American peregrine falcons (*Falco peregrinus anatum*) reared by the Peregrine Fund (Ft. Collins, Colorado) were released into the wild in six western States. Thirty-one of the birds survived to the point of being self-sufficient.

Last year (1979) was the first year it was documented in the western

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U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Alaska Area:** Alaska

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Endangered Species Act Extended and Amended

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Critical Habitat proposals are to be held separately (with a hearing to be held if requested within 15 days of a public meeting).

- The time period for which emergency listing and Critical Habitat designations are effective (now applicable to both animals and plants) has been extended from 120 to 240 days.

- A new provision requires the development and notice (with opportunity for public comment) of guidelines for the handling of petitions for listing, for priority systems for listing, and for priority systems for developing and implementing recovery plans.

- A "status review" is now required prior to the preparation of proposals for listing.

- Foreign nations—with the help of Department personnel—are encouraged under a new subsection to develop programs for the conservation of listed plants.

Section 7 Consultations/Exemptions

Necessary changes in language have been made throughout the Act to revise the jeopardy standard under Section 7 from "would jeopardize" to "is likely to jeopardize."

Other new provisions:

- All Federal agencies are required to "confer" with the Secretary on any action likely to jeopardize a proposed

United States that a peregrine released in a prior year (1978) returned to its release site.

Alaska Area. A wintering population of 1,750 Aleutian Canada geese (*Branta canadensis leucopareia*) has been estimated by observers in California. This is the highest wintering population recorded for the species since it was listed as Endangered (F.R. 3/11/67). An estimated fall flight of 1,700 was predicted from this year's nesting survey of Buldir Island, a survey conducted every three years to monitor the island's wild nesting population.

In the second year of propagation-release efforts to restore nesting populations on Agattu Island, no propagated geese have been sighted on the California wintering grounds. This summer the Service experimented by trapping 21 adults and 15 goslings from Buldir Island and releasing them with the propagated geese. Fourteen adults and four goslings from the Buldir Island population have been sighted on the wintering grounds.

species. (The intent is for agencies to begin informal discussions at an early stage). No "irreversible or irretrievable commitment of resources" requirement is imposed for *proposed* species impacts.

- Biological assessments (as required prior to filing for an exemption from Section 7) must be conducted in cooperation with the Secretary and under the supervision of the appropriate Federal agency. (Completion of an adequate assessment then qualifies the applicant for a possible permanent exemption under the Act.)

- An exemption application from a permit or license applicant must be filed within 90 days of final agency action (such as permit denial, which may follow issuance of a biological opinion).

- With regard to exemption applications initiated subsequent to the issuance of negative biological opinions by both the Secretary of Interior and Commerce for the same agency action (such as that involving sea turtles, for which jurisdiction is shared), the two Departments will jointly convene a review board.

- Regarding exemptions under Section 7, threshold requirements shall apply to both the Federal agency and the exemption applicant. (i.e., the applicant must carry out all consultation requirements, conduct any necessary biological assessment, and refrain from making a commitment of resources in order to qualify for exemption consideration, regardless of the applicant's identity.)

Service Withdraws

Continued from page 1

California Channel Islands, to be Endangered species June 1, 1976
Proposed Endangered status for some 1700 U.S. vascular plant taxa June 16, 1976
Proposed Endangered or Threatened status for 41 U.S. species of Fauna Jan. 12, 1977

It should be noted that all animals and plants subject to withdrawal may be repropounded under provisions of the 1978 Amendments if sufficient new information is available to warrant a new proposed listing.

Catch 22

Listing animals and plants to boost their protection and recovery under the Act's provisions is the most basic function of the Endangered Species Program. Why the delay?

Faced with the many complex procedural requirements brought with the new amendments (intertwined with other applicable laws), in addition to recent Presidential directives affecting all Federal regulatory processes, our Service's listing functions were slowed almost to a halt in 1979.

- An exemption granted by the Endangered Species Committee shall be permanent with respect to all listed species regardless of whether the species was included in the biological assessment (and only if the assessment was conducted), *unless* a listed species not so identified will become extinct. (In this case, the Committee, which must meet within 30 days of such a finding by the Secretary, has 60 additional days to determine permanence.)

New Commission/Scientific Authority

Under a new section, the Secretary of the Interior (acting through the Fish and Wildlife Service) has been designated as both the U.S. Management Authority and the U.S. Scientific Authority for purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). (Director Greenwalt has placed the Scientific Authority function under the Service's Associate Director for Research, while the Management Authority function will continue under the Associate Director for Federal Assistance.)

While abolishing the existing En-

Consider the requirements:

- "To the maximum extent prudent," Critical Habitat must now be specified at the time a species is listed (with certain exceptions). Thus, all available data on habitat essential to the conservation of the species must be compiled preparatory to a listing and Critical Habitat proposal or, in cases where the species has been proposed, in a separate Critical Habitat proposal prior to final listing.

- As mandated under Section 4(b), we are now required to consider the economic impact of designating any particular area as Critical Habitat. If it is found that the benefits of excluding an impacted area from the designation outweigh the benefits of specifying the area, then the proposed Critical Habitat area may be so modified (so long as extinction of the species would not result). Thus, even before a listing and Critical Habitat proposal may be readied for publication, we must now consider biological as well as economic and other pertinent information before the extent of economic impacts on any given area can be measured. (Only then can we determine what, if any, area should be excluded from consideration.)

- In addition to the economic analyses required under the 1978 amendments, Executive Order 12044 requires

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dangered Species Scientific Authority (ESSA)—established previously under Executive Order 11911 as the U.S. Scientific Authority—within 90 days of enactment, the new law also creates an independent International Convention Advisory Commission (ICAC) to advise on scientific policy under CITES. Similar in structure to the existing ESSA, ICAC is to be composed of at least six (and possibly seven) members: with one member each appointed by:

- the Secretary of the Interior
- the Secretary of Agriculture
- the Secretary of Commerce
- the Director of the National Science Foundation.

One member (to serve a 2-year term) shall also be appointed by the Secretary of the Interior from among officers and employees of State fish and wildlife agencies, and the Secretary of the Smithsonian Institution is invited to appoint a seventh member.

A Chairman is to be elected annually by the members. All members must be scientifically qualified.

Speaking of the new Commission

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Endangered Species Act Extended and Amended

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upon signing the 1979 amendments, President Carter said, "that scientific integrity of the Convention will be preserved by the Commission's advice on the effects of trade, the listing of species on Convention appendices, and the interpretation and implementation of the Convention." Under the new provisions, the Commission will make recommendations (by majority vote) on all matters pertaining to the responsibilities of the Scientific Authority under the terms of the Convention.

As set forth in the new law, the new Commission will "to the extent practicable, ascertain the views of, and utilize the expertise of, the governmental and nongovernmental scientific communities, State agencies responsible for the conservation of wild fauna and flora, humane groups, zoological and botanical institutions, recreational and commercial interests, the conservation community, and others as appropriate" in discharging its responsibilities.

The public will have an opportunity to comment on all Management and Scientific Authority decisions, and the Scientific Authority must also provide, upon publication of final notices, an explanation of its reasons for any decision not consistent with the Commission's recommendations.

Until such time as the Chairman and members are appointed (or no longer than 90 days after enactment), the current ESSA will carry out the functions of the newly-created Commission.

Appropriations

Reauthorizing administration of the Endangered Species Act for an additional three years, the 1979 amendments allow appropriations to implement the Act's provisions (except as authorized under Section 6 and as discussed below for portions of Section 7) not to exceed the following amounts:

Interior:	\$23,000,000 for FY 1980
	25,000,000 for FY 1981
	27,000,000 for FY 1982
Commerce:	\$ 2,500,000 for FY 1980
	3,000,000 for FY 1981
	3,500,000 for FY 1982

Additional appropriations of \$600,000 are also authorized to support Endangered Species Committee and review board functions (under Section 7)

for each of Fiscal Years 1980, 1981, and 1982.

For the first time, the amendments also authorize appropriations for the Department of Agriculture to facilitate enforcement of the Act and the Convention with regard to the importation and exportation of terrestrial plants. Amounts not to exceed \$1,500,000 for FY 1980, \$1,750,000 for FY 1981, and \$1,850,000 for FY 1982 have been

allowed.

Scrimshaw

Finally, the deadline for the sale of scrimshaw has been extended under the amendments. Section 10(f) now provides for one last renewal of certificates of exemption, allowing the sale for three more years *only* of whale parts and products held in stock prior to 1973.

Service Withdraws

Continued from page 3

a "determination of significance" prior to the publication of any proposed ruling. Among other things, this involves an assessment of economic, recordkeeping, and other impacts on Federal, State, and local programs. (A rule is generally considered "significant" if it has an economic effect of more than \$100 million.) If a proposal is found significant, then a work plan, notice of intent, and regulatory analysis would be required prior to publication of the proposal.

- Once finalized and published in the *Federal Register*, all Critical Habitat and listing proposals must be offered to scientific journals for publication; the substance of proposals must be published in affected area newspapers; and, notice must be given to local governments in affected areas (in addition to State Governors). Moreover, a public meeting must be held (and, when requested, a public hearing) *prior* to designation of Critical Habitat.

- As a separate stipulation, all proposed rulemaking packages must contain an Environmental Impact Assessment (in compliance with the National Environmental Policy Act) outlining the environmental impacts of listing the animal or plant. Should significant impact be discovered during the proposal process, then a full-blown Environmental Impact Statement may be required prior to final listing.

- Finally, as always, public comments are solicited and reviewed (and incorporated as appropriate in the final rulemaking document) prior to final listing and Critical Habitat determination.

At first, it seemed a no-win situation for the Program's listing biologists. Not only would it be a miraculous feat to compile and commit to paper all the

biological, habitat, and economic data required by the 1978 provisions, *with available staff*, but it had to be done within given deadlines. Even more frustrating was the knowledge that—despite the emergency appointment of special task forces to speed compliance—the painstaking procedures for analyzing the economic impacts of a Critical Habitat determination were not yet completed. Without economic data, no determination on the appropriateness of Critical Habitat (in most cases) could be made. Without Critical Habitat, no listing.

This "catch-22" has not only forced the withdrawal of possibly hundreds of species which could have otherwise received protection; it has also now required staff specialists to spend valuable time pouring over new biological data on which to base listing consideration *prior* to repositing many of these same jeopardized species.

Outlook for '80

While procedures are not yet fully developed, prospects for proposal and final listing actions in 1980 are somewhat brighter.

With help from Department solicitors, guidelines to assist regional and Washington Office specialists in conducting economic analyses are being finalized. Final regulations guiding compliance with all Section 4 (primarily listing) provisions—inclusive of changes brought with December 1979 amendments (see story on page 1)—should be published soon.

Several economists are joining our staff to assist in the necessary economic assessments. Critical Habitat specialists have been hired. At least six additional biologists will soon be employed by the Washington and regional offices to assist in listing and data gathering—responsibilities now shared by the regions.

Together, the regional and Washington Offices hope to propose more than 200 species for protection (and to list as many of these as possible) during 1980.

Houston Toad Propagation Project

Under contract to the Service, researchers at the Houston Zoological Gardens have been working to perfect methods for raising Endangered Houston toads (*Bufo houstonensis*) in captivity. It is hoped that successful propagation will help boost the recovery of this small, secretive toad, whose total numbers are estimated at less than 1,500.

Of 3,600 eggs collected from Bastrop County, Texas, in March 1978, and maintained at 24°C, 91

percent survived to metamorphose. Of 4,875 eggs laid by two pairs of *B. houstonensis* collected in amplexus in February 1979 (and maintained at 27°C), 95 percent of the tadpoles survived. Experiments with tadpole diets were conducted, and data on growth, thermal preference, and ultraviolet treatment were gathered.

Toadlets were more difficult to maintain in captivity, however, with only 2 percent and 5 percent

survival rates reported for 1978 and 1979, respectively.

Five hundred sixty-four metamorphosing toads were released into the wild in 1978, and a stepwise release plan for adults has been devised.

The researchers will intensify their propagation efforts over the next two years, under contract to the Service, and plan to monitor the survival of sexually mature toads upon their release in the spring of 1981.



Photo by C. Kenneth Dodd



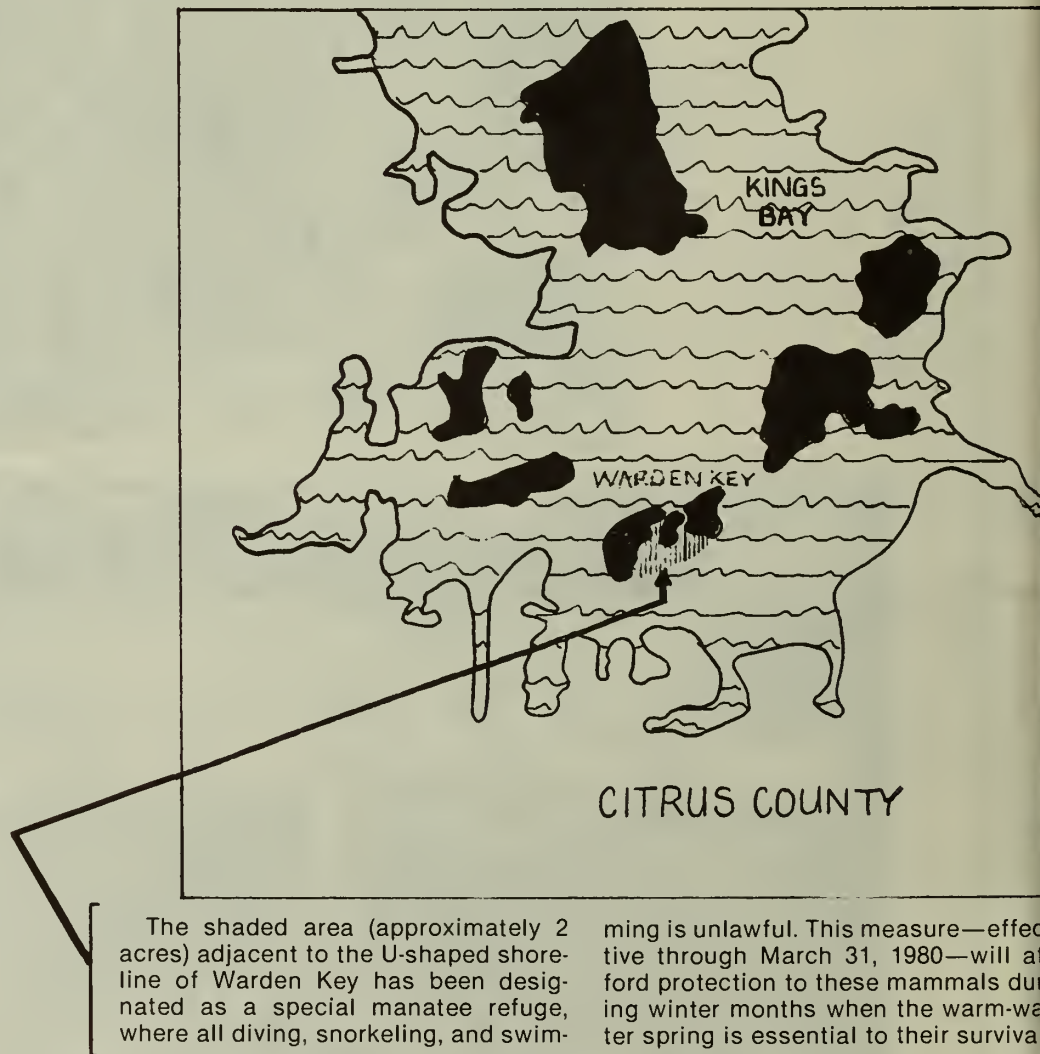
Photo by C. Kenneth Dodd

Emergency Protection Area For The Manatee

Acting to protect one of the most critically Endangered marine mammals, the Service has designated a portion of Kings Bay in Florida's Crystal River as a protected "refuge" for the manatee.

West Indian manatees (*Trichechus manatus*) are known to congregate in the natural warm-water springs of Kings Bay during the winter months, where they are safe from otherwise debilitating temperatures (below about 70 degrees F). Recent studies show that as many as 100 manatees, or one-tenth of the total estimated population, use the warm waters of Crystal River in the winter. (As many as 79 of the animals have been counted in a single survey of Kings Bay.)

Unfortunately, the presence of manatees is an added attraction for SCUBA divers and snorkelers who are



also drawn to the clear, warm waters of Kings Bay in the winter. Manatees are gentle creatures, and some seem to enjoy friendly contact with humans. The majority of animals, however, are fearful of aggressive swimmers, and will often retreat into colder waters where they may not survive.

Increasing human presence is now causing manatees to abandon their favorite resting areas close to the Bay's larger springs in favor of a tiny, 2-acre spot in the lee of Warden Key. Under its new regulations, the Florida Department of Natural Resources recently designated this a "motorboats prohibited" zone (imposing less restrictive controls over boat operations in other portions of Kings Bay). Once posted, however, Federal and State officials soon learned that manatee protection signs were actually attract-

ing divers to this very location where the animals are most vulnerable.

In view of this critical disturbance problem, and in cooperation with Florida's protection efforts, the Service has established this same 2-acre area as an emergency refuge (not to be confused with a National Wildlife Refuge), where all swimming, diving, and snorkeling are prohibited for a limited time. (Federal "back-up" regulations authorizing the establishment of manatee protection areas, and prohibiting the violation of State laws protecting manatees, became effective last November (F.R. 10/22/79)—see the November 1979 BULLETIN.)

The emergency designation—effective through March 31, 1980—was advertised in local newspapers, and the area was posted as of January 11, 1980. The Service will soon publish

notice in the *Federal Register* of its intent to propose this same area for permanent designation as a (seasonal) manatee protection area.

Manatees are gentle creatures, and some enjoy friendly contact with humans. The majority fear aggressive swimmers, however, and may be driven into colder waters where they cannot survive.



U.S. Fish & Wildlife Service Photo

Cooperative California Condor Program Signed

A desperation attempt to save the Endangered California condor (*Gymnogyps californianus*) was given official sanction on December 17 as the Cooperative California Condor Conservation Program was signed by representatives of the Fish and Wildlife Service,

National Audubon Society, California Department of Fish and Game, U.S. Forest Service, and Bureau of Land Management.

Speaking at the signing ceremony, Interior Secretary Cecil D. Andrus said it was necessary to choose between

continued consumption of our natural resources, or saving a species which has dwindled to a population numbering 20 to 30 individuals. "We are determined to duplicate the growing success of the whooping crane, which continues to demonstrate that human



Pictured from left to right: Russell Peterson, president of the National Audubon Society, Secretary Andrus, and Charles Fullerton, Director of the California Department of Fish and Game hold a cloth replica of a California condor at ceremony formalizing a multi-agency agreement to rescue this Endangered species.

SURVEY EXAMINES ATTITUDES ON ENDANGERED SPECIES

intervention can mean the difference between survival and extinction."

The multiagency agreement was made possible, in part, by a \$500,000 special appropriation approved by Congress in November. A like amount will be supplied by the National Audubon Society over the next 5 years. The program calls for research, protection of present habitat and identification of new habitat, the trapping, telemetering and tracking of remaining wild condors, and captive propagation aimed at reintroducing captive-bred condors into the wild over the next two to four decades.

This coming fall, John C. Ogden of Audubon and Noel F. R. Snyder of our Service's Patuxent Wildlife Research Center will begin direct examination of some of the condors. These birds will be captured in an effort to determine their ages, sex, and general health using blood, fecal, and feather pulp samples. Soon after their capture, the condors will be released, equipped with wing tags and radio transmitters. (The two research biologists will work in conjunction with Sanford R. Wilbur, who was recently selected as California Condor Coordinator. Wilbur, who also leads the California Condor Recovery Team, will be supervised by the Service's Sacramento Area Office for this new effort.)

The Forest Service and Bureau of Land Management will provide manpower and equipment for field research, conducting inventories, and special habitat studies.

In the meantime, biologists have begun field studies and experiments with similar species. In cooperation with the California Department of Fish and Game, the researchers are measuring pesticide levels in surrogate species such as the turkey vulture (*Cathartes aura*) in an attempt to pinpoint the effects of environmental contamination.

At the Service's Patuxent Wildlife

What do Americans think of saving Endangered species? A three-year study conducted by Dr. Stephen Kellert of the Yale School of Forestry and Environmental Studies, under contract to the Service, provides some interesting answers.

According to the study, which is based on 3,107 interviews conducted nationwide, people tend to be more supportive of an Endangered species that is either attractive, has a close biological relationship to humans, or is important in American history or folklore. That means that people generally favor protecting the bald eagle (*Haliaeetus leucocephalus*), eastern cougar (*Felis concolor cougar*), American crocodile (*Crocodylus acutus*), and the blue-black silverspot butterfly (*Speyeria nokomis nigrocaerulea*), a candidate Threatened species.

However, most people draw the line when it comes to protecting species like the furbish lousewort (*Pedicularis furbishiae*) or eastern indigo snake (*Drymachron corais couperi*).

Fish and Wildlife Service Director Lynn A. Greenwalt said, "The results of this study are significant because,

without a doubt, people's opinions and behavior can influence the success or failure of conservation programs as much as any wildlife technique." Noting that the study results will be useful in developing policy guidelines and determining areas for education, Greenwalt was quick to add, "wildlife management can never be a popularity contest."

Specific findings of the study, the first to analyze overall public opinion on wildlife issues as opposed to polling special interest groups, include:

- Two-thirds of those asked approved of killing whales for a useful product as long as the species was not Endangered.

- Only 34 percent of the respondents had some knowledge of the Endangered Species Act and only 17 percent of those polled were familiar with the snail darter/Tellico Dam controversy.

- Most people, when asked, favored protecting wildlife at the expense of jobs, housing, and development projects.

This report is the first of four Dr. Kellert is preparing for the Service. The others will deal with characteristics of wildlife users, socioeconomic effects on attitudes, trends in wildlife attitudes and uses over the last 75 years, and how children's attitudes toward wildlife are formed.

Single copies of the report are available from the Publications Unit, U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

Research Center, a captive breeding program for Andean condors (*Vultur gryphus*) has produced 11 healthy chicks. Also at Patuxent, wing tags have been tested successfully on Andeans, and radio transmitters under consideration for use on California condors are being tried.

This spring, captive-reared Andean condors fitted with radio transmitters will be released in South America, in their native habitat. Observations made during this experiment should provide important information for similar attempts with California condors.

Propagation facilities for California condors are now being built at the San Diego Zoo and Wild Animal Park. (A second facility will soon be underway at the University of California at Santa Cruz.) At present, the only California condor in captivity, a male named Topatopa, is housed at the Los Angeles Zoo. Biologists hope a mate can be found for this bird.

For more details on the condor recovery program, see our *Special Report*, "Last-ditch Contingency Plan Seen as Only Hope for California Condor," in the May 1979 BULLETIN.

Rulemaking Actions

December 1979

CRITICAL HABITAT REPROPOSED FOR ILLINOIS MUD TURTLE, DESERT TORTOISE POPULATION

Complying with new procedural requirements under amendments to the Endangered Species Act, the Service has repropoed Critical Habitat for the Illinois mud turtle and the Beaver Dam slope population of the desert tortoise (F.R. 12/7/79).

Background

The Illinois mud turtle (*Kinosternon flavescens spooneri*) and Beaver Dam slope population of the desert tortoise (*Gopherus agassizii*) were respectively proposed for protection as Endangered with determination of Critical Habitat on July 6 and August 23, 1978 (see the August and September 1978 BULLETINS). However, before final action could be taken on these proposals, President Carter signed into law the Endangered Species Act Amendments of 1978, significantly modifying procedures to be followed in designating Critical Habitat (see story on Service withdrawals on page 1 and October 1978 BULLETIN). Among other things, the new provisions call for public meetings (or hearings when requested), economic impact analyses, and summaries of activities likely to be affected prior to the final designation of Critical Habitat.

Turtle

Described in 1951, Illinois mud turtles are known to occur in a few localities in Missouri, Illinois, and Iowa. Major threats to the subspecies include habitat modification or destruction of ponds, wetlands and adjacent nesting sites, overcollection, predation, and pollution of water sites. The mud turtle is highly susceptible to changes in water quality and pond levels within its limited habitat.

Any significant alteration of water levels (from ground water dumping or

drainage of ponds or wetlands) or reduction in water quality (from siltation, land clearing, or ground water pollution) that would reduce or eliminate vegetation and aquatic prey could adversely modify the turtle's Critical Habitat. Shoreline modification, dredging, filling, agriculture, real estate development, and other similar activities could also affect shoreline levels, water quality, nesting, and hibernation sites for the species.

A circular area (with a one-mile radius) in Illinois' Mason County and a roughly rectangular area (including Spring Lake, its shores, and Monsanto Bay) within Iowa's Louisa and Muscatine Counties have been proposed as Critical Habitat for the mud turtle.

Tortoise

On August 8, 1977, Dr. Glenn R. Stewart petitioned the Service to list as Endangered the Utah desert tortoise population and recommended areas for designation as Critical Habitat.

This unique population is threatened primarily by habitat modification by grazing animals (including competition for, and destruction of, feed plants, shelter and overwintering sites, and trampling). Overcollection, predation, and habitat destruction by off-road vehicles are also threats.

To protect its habitat, the Service proposes designation of a 35-square mile area of land in southwestern Utah's Washington County (administered by Interior's Bureau of Land Management) as Critical Habitat for the Beaver Dam slope population of the desert tortoise. Activities such as unregulated grazing, development that would destroy burrows and overwintering sites, overcollection and harassment by humans, and the unregulated use of ORVs could adversely impact the tortoises or their habitat.

Public Meetings/Comments Solicited

The public was invited to attend public meetings on the proposal on January 10, 1980, (for the desert tortoise) and on January 30 and 31 (for the mud turtle). We regret that we were unable to provide advance notification of these public meetings to BULLETIN readers.

Comments, as well as biological and

economic data, in response to this proposal should be submitted no later than February 5, 1980, to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

The Service has drafted an impact analysis, and believes at this time that economic and other impacts of this proposed action are insignificant (under provisions of the 1978 Amendments and other applicable Federal laws). Upon completion, a final impact analysis will serve as the basis for a determination as to whether exclusion of any area from Critical Habitat designation is warranted (for economic impact or other reasons).

MUD TURTLE COMMENT PERIOD EXTENDED

During public meetings on the reproposal of Critical Habitat for the Illinois mud turtle, additional technical information on the status of this species was presented. To allow full submission and consideration of all available data on the turtle, the Service has extended the comment period on its reproposal to March 7, 1980.

TWO CROCODILES ENDANGERED

Because of increasing exploitation and habitat loss, populations of the American crocodile (*Crocodylus acutus*) and the saltwater crocodile (*Crocodylus porosus*) outside of Papua New Guinea have been listed by the Service as Endangered (F.R. 12/18/79).

The American crocodile occurs on islands and coastal areas throughout the Caribbean Sea and on the Pacific Coast of Central and South America from Mexico to Ecuador. The saltwater, or estuarine, crocodile ranges throughout Australia and Southeast Asia, where it occurs in Papua New Guinea, Indonesia, Malaysia, Thailand, Burma, Bangladesh, India, Cambodia, Vietnam, Sri Lanka, and the Philippines. This species may be the largest of reptiles, with lengths reported at well over 20 feet.

Loss of much available habitat throughout their ranges has made these species especially vulnerable to the ever-increasing human presence. Crocodilians do not tolerate much human disturbance, especially while nesting, and human harassment as well as the destruction of suitable nesting and basking sites are major factors in the decline of both *C. acutus* and *C. porosus*.

Crocodilian hides are extremely valuable in the production of fashionable leather items, and poaching constitutes a primary threat to the saltwater and American crocodile even in areas where restrictions are imposed on taking and commerce in these species. In countries where the species are unprotected, some populations have been virtually eliminated.

Malicious killing has also taken its toll on crocodilians—especially involving *C. porosus* near populated areas, where the species has earned a reputation as a person eater.

Populations of *C. porosus* and *C. acutus* are protected under appendices to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), a 54-nation treaty designed to monitor trade in imperilled species.* While many countries also have their own laws protecting these crocodilians, they are often ignored, or are impossible to enforce due to a lack of manpower and funds.

Commercial farming schemes have also impacted populations of crocodiles, as they often rely on young collected from the wild. In some cases, *C. porosus* has been hybridized with protected species in an attempt to circumvent trade restrictions, with detrimental effects to both species involved.

Because of assurances from the Government of Papua New Guinea that its wild populations are not now jeopardized and that it will strictly regulate crocodile farming and other potentially exploitative activities in that country, the Service has excluded the Papua New Guinea population of *C.*

porosus from the Endangered classification.

Both the American and saltwater crocodile (exclusive of the Papua New Guinea population) had been proposed for listing as Endangered on July 24, 1979 (see the August 1979 BULLETIN), subsequent to a status review (F.R. 2/5/79). The Florida population of American crocodile was already listed as Endangered on September 25, 1975, and its Critical Habitat has been designated (F.R. 9/24/76).

The protection afforded these reptiles under the Endangered Species Act will supplement that now provided under CITES by further restricting commercial trade in their parts and products.

STATUS OF VIRGIN ISLANDS BOA CLARIFIED

A boa by any other name is still Endangered. In the course of reviewing the status of various animal species listed before 1975 (F.R. 5/21/79), the Service discovered that a change in the scientific name of the Virgin Islands tree boa may cause confusion over its Endangered status.

The Virgin Islands tree boa was listed as Endangered under the name *Epicrates inornatus* (the "Puerto Rican" boa) on October 13, 1970. At that time, the Virgin Islands population was classified as a subspecies, *Epicrates inornatus granti*. The data used to list this snake was supplied by Dr. James A. Peters of the U.S. National Museum and included the British Virgin Islands in the range of *E. inornatus* as well as mentioning problems this snake encountered in the Virgin Islands. It is clear then that the Virgin Islands boas were included as Endangered under the name *Epicrates inornatus*.

However, in 1974, the Virgin Islands population was relegated to the species *Epicrates monensis*, inclusive of *E. m. monensis* from Mona Island in Puerto Rico, and *E. m. granti* from the U.S. and British Virgin Islands. The name change never made the *Federal Register* or 50 CFR 17.11, so it has been generally overlooked that boas in the Virgin Islands are protected as Endangered.

Because this rule is only a technical correction to the Endangered species list, notice and comment are being waived and the rule became effective upon publication (F.R. 12/7/79).

FEDERAL CRITICAL HABITAT RECOMMENDATIONS DUE

We would like to take this opportunity to remind all Federal agencies of the deadlines for the submission of recommendations for Critical Habitat designations.

In his May 1977 Environmental Message, President Carter directed all Federal land-managing agencies to survey their lands and make Critical Habitat recommendations according to time-tables established by the Secretary of the Interior (see January 1978 BULLETIN). Because of additional procedural requirements imposed by the Endangered Species Act Amendments of 1978 affecting both listing and formal Critical Habitat determination, Federal agencies have also been asked to supplement necessary biological information with data on economic and other anticipated impacts of Critical Habitat designation on their lands.

In line with species priority categories previously provided to affected agencies, deadlines for the submission of biological (and if possible economic and other data) are:

High priority species*: January 1, 1980,
Medium priority species: July 1, 1980,
Low priority species: January 1, 1981.

* If specific reference lists have not been provided, or for additional guidance on data required, kindly contact Dr. Paul Opler, Office of Endangered Species, 703/235-1975.

Rulemaking Actions

Continued on page 12

* *C. acutus* is listed on Appendix II (except for the Florida population, which is on Appendix I), and *C. porosus* is listed on Appendix I (except for the Papua New Guinea population, which is on Appendix II).

==Rulemaking Actions==

Continued from page 11

PLANT DATA SOLICITED

A majority of the U.S. plants affected by the December 10, 1979, withdrawal notice (see story on page 1) were also included in a July 1, 1975, notice of review soliciting data on the status of, and threats to, 3,187 vascular plant taxa (considered by the Smithsonian Institution as endangered, threatened, or extinct). The Service continues to welcome data on the 3,131 plants that remain subject to this review, for possible listing consideration. (These plant taxa should be considered in environmental planning.)

In addition, to incorporate new information on these and other vulnerable plant taxa, the Service plans to publish an updated notice (to supersede the 7/1/75 notice) of candidate plants that may qualify for listing under the amended Act. In this regard, substantive data on the status, population numbers, distribution, and threats to rare plants are hereby solicited, to be forwarded to the Office of Endangered Species, Attn: Plant Notice, U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240, by March 15, 1980.

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	35	251	286	3	21	24
Birds	67	145	212	3		3
Reptiles	11	50	61	10		10
Amphibians	5	9	14	2		2
Fishes	29	11	40	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	49		49	7	2	9
Total	228	469	697	44	23	67

Number of species currently proposed: 45 animals
(no plants)

Number of Critical Habitats listed: 35

Number of Recovery Teams appointed: 66

Number of Recovery Plans approved: 30

Number of Cooperative Agreements signed with States:
33 (fish & wildlife)
3 (plants)

December 31, 1979

New Publications

Status of Endangered and Threatened Plant Species on Tonopah Test Range—A Survey, written by William A. Rhoades, Susan A. Cochrane, and Michael P. Williams for the Department of Energy, provides information on

proposed endangered and candidate threatened plant species either present or suspected to be present on the Tonopah Test Range in Nevada, a test site for weapons ballistics, rocket and gun firings, chemical explosives, and nuclear ordnance for the U.S. Government. The report is available from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161, at \$5.50 per printed copy or \$2.25 for microfiche.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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Service Plan Maps Whooping Crane Recovery

A popular symbol of endangered wildlife, the whooping crane (*Grus americana*) stands to benefit from a Service-approved recovery plan.

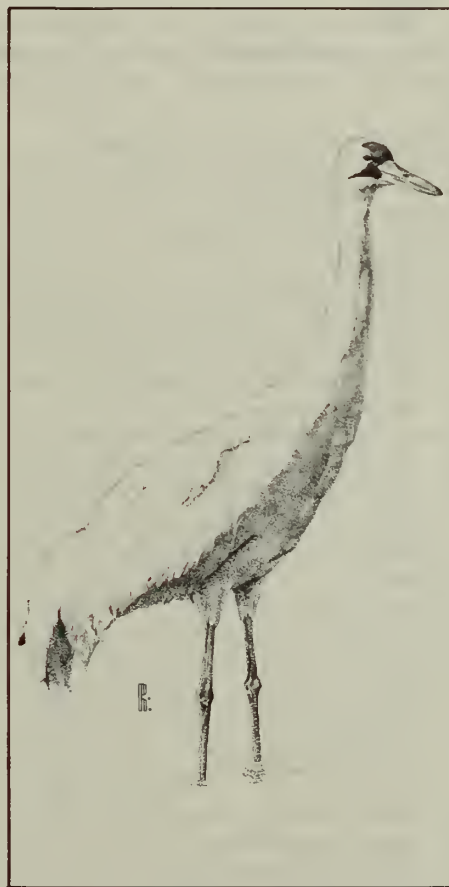
The concept of whooping crane recovery is not new to those concerned with the survival of this stately bird, the tallest in North America. Management actions by the United States and Canada, in response to increasing public concern for the crane, have resulted in a gradual increase in their numbers—from a dismal low point of only 21 birds in 1941, to 119 in both wild and captive populations.

According to the Service-appointed Whooping Crane Recovery Team, the plan's prime objective of removing the whooping crane from Endangered status could be met by (1) increasing to at least 40 nesting pairs the wild population that migrates between breeding grounds in Canada's Wood Buffalo National Park and wintering grounds at the Aransas National Wildlife Refuge in Texas and (2) establishing at least two additional, separate, and self-sustaining populations numbering at least 20 nesting pairs each.

(Current whooper populations include the wild Wood Buffalo-Aransas flock, a foster-reared wild population which migrates between Grays Lake National Wildlife Refuge in Idaho and the Rio Grande Valley in New Mexico, and captive birds at the Service's Patuxent Wildlife Research Center in Maryland, the International Crane Foundation in Baraboo, Wisconsin, and the San Antonio Zoo.)

Background

The whooping crane has never been common in recent times, with the population estimated at about 1,300 in the



mid-1800's. At the time of the establishment of the Aransas Refuge in 1937, only two small breeding populations remained—the migratory Wood Buffalo-Aransas flock and a sedentary population in southwestern Louisiana. A storm in 1940 reduced the Louisiana population beyond recovery. The last member of that population was taken into captivity in 1948.

Historically, the whooper's breeding

range (during North American settlement) extended from central Illinois, northwest through the northern half of Iowa, western half of Minnesota, northeastern corner of North Dakota, southern Manitoba and Saskatchewan, to the vicinity of Edmonton, Alberta. Whooping cranes disappeared from the heart of their breeding range in the northcentral United States by the 1890's. In 1954, an isolated breeding population was discovered in Wood Buffalo National Park—the only wild population that managed to survive.

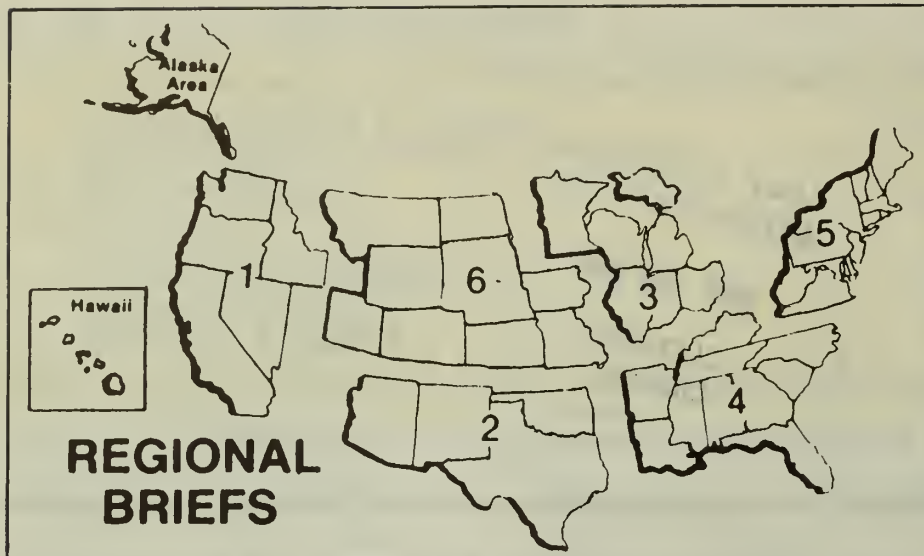
Reasons for Decline

There have been many factors associated with the species' decline. As with many other migratory birds with delayed sexual maturity (estimated at 4 to 6 years of age) and apparent life-long pair bonds, whooping cranes adhere to their ancestral breeding grounds, migratory routes, and wintering areas, leaving little likelihood for expansion.

Most significant in the species' decline are man-associated factors. The agricultural development of the Great Plains made nearly all of the whooper's original range unsuitable. Disruptive practices included draining, burning, plowing, sowing, cultivating, harvesting, and human activity associated with these operations. Although whoopers will tolerate short periods of human intrusion, they are extremely wary on the breeding grounds and will not stay near human activity.

To date, there is no evidence that pesticide contamination has adversely affected the welfare of the whooping crane. However, potential harm from environmental contamination (such as oil spills which have occurred near the

Continued on page 4



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of January.

Region 1. The 'Ewa Plains Botanical Survey has been completed. Copies are available from the Pacific Islands Area Office, U.S. Fish and Wildlife Service, 300 Ala Moana Blvd.,

Rm. 5302, Honolulu, Hawaii 96850.

Status reports on 21 candidate Threatened and Endangered plants in Idaho were received in the regional office.

Recovery plans for the Pahrump killifish (*Empetrichthys latos*), California condor (*Gymnogyps californianus*),

and California least tern (*Sterna albirostris browni*) were submitted for the Director's approval.

Region 2. The red wolf (*Canis rufus*) and Gila trout (*Salmo gilae*) Endangered Species Reports were published and are available from the Albuquerque Regional Office.

Jack Woody met with the Departamento de Peces in Mexico to discuss cooperative agreements for conservation programs in areas of mutual concern—specifically, sea turtles and freshwater fishes.

The first quarterly Dexter National Fish Hatchery Endangered Fishes Program review was held.

A female loggerhead sea turtle (*Caretta caretta*), radio tagged in Louisiana, is now reported near Brownsville, Texas. The turtle has logged 400 miles in 4 months.

Region 3. Regional personnel met with the Louisa Ecological Advisory committee to discuss the Illinois mud turtle (*Kinosternon flavescens spooneri*). A public meeting on the reproposal of Critical Habitat for this species was held in Springfield, Illinois.

The Regional Office hosted a meeting of plant contractors from all six States (also attended by Forest Service, Nature Conservancy, and Region 5 representatives).

Region 5. Funding for plant survey work in Delaware, Maryland, and West Virginia has been approved. This is the second round of surveys in these States, and will provide data on additional plants which should be considered for protection as Endangered or Threatened species.

Final reports for rare and endangered plants of New York, Maryland, and Pennsylvania were received.

Both Region 5 and 3 are coordinating their plant activities, cooperating in the development of survey formats, data exchange, and conservation plans.

Region 6. Public meetings were held on January 10 (on the reproposal of Critical Habitat for the Beaver Dam slope population of the desert tortoise, *Gopherus agassizii*, and on January 31 (on the Critical Habitat reproposal for the Illinois mud turtle, *Kinosternon flavescens spooneri*).

To further assess the effects of the O'Neill Irrigation Project, Interior's Water and Power Resource Service (WPRS) is sponsoring a study of the Niobrara River in northern Nebraska. Subsequent to our Service's September 1979 biological opinion indicating that reduced water flows resulting from the proposed Norden Dam would likely jeopardize the whooping crane (*Grus americana*), WPRS will study possible alternatives to dam opera-

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U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Alaska Area:** Alaska

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tions to maintain sandbars and associated habitat used as a stopover along the whooper's long migration to its breeding grounds in Canada. Our Service (with funding from WPRS) will also conduct bald eagle (*Haliaeetus leucocephalus*) surveys along the Niobrara to determine possible impacts.

Three Primates and Seven Cacti Considered for Transfer to Appendix I



Photo by Jessie Cohen

The Diana monkey, occurring only in West Africa, is one of the primates being considered for transfer to Appendix I of CITES.

Based on information indicating the need to further restrict trade in these species, the Service is considering proposing the transfer of two monkeys, a mandrill, and seven species of Mexican cacti from Appendix II to Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)—F.R. 1/4/80.

All of these species and one additional primate (subsequently shown to be ineligible) had been included in proposals previously presented by the United States at a Special Working Session of CITES party nations in October 1977. Although the delegates to the technical meeting endorsed the U.S. proposals, they could not be formally adopted until submitted to the Conference of the parties.

The Service is now seeking information on the status of the following plants and animals now listed under Appendix II (those species which, although not now necessarily threatened with extinction, may become so unless trade in them is strictly controlled) to determine whether to proceed with U.S. proposals to place them on the more restrictive Appendix I (those species threatened with extinction which are or may be affected by trade).

Cacti

Ariocarpus agavoides (Castaneda) E. F. Anderson. Known as the living rock cactus, Magueyitos or Chaute, this cactus is known from one area in Tamaulipas, Mexico, where it is threatened by overcollecting for horticultural purposes. Plants grown from seed may take at least five years before flowering (none are known to be grown by

any U.S. nursery), and most specimens in trade are therefore obtained from the wild.

Ariocarpus scapharostrus Bodeker. This cactus is also called the living rock cactus or Chaute. It is known from one area in Nuevo León, Mexico, and is also jeopardized by overcollecting. No source of seed-grown plants is known, making the species even more vulnerable to commercial harvest. Current information is lacking on the extent of national utilization or international trade.

Aztekium ritteri Bodeker. Known from one area in Nuevo León, the Aztec cactus population has been estimated at 2,000–3,000 individuals. Although the extent of national utilization and international trade are not known, collecting from the wild has apparently endangered this species (which is difficult to cultivate). The Endangered Species Scientific Authority (ESSA) urges inclusion of this cactus on Appendix I due to its rarity, restricted distribution, and high value in trade.

Echinocereus lindsayi Meyran. Known from one location in Baja California, Mexico, this cactus (which has no common name) has been virtually extirpated from its native habitat by American collectors. Although the extent of national utilization and international trade are not known, the species is considered in need of additional protection because of its popularity.

Obregonia denegrii Fric. This cactus is known from two valleys in Tamaulipas, Mexico. ESSA reports that it has been virtually extirpated from its type locality and is absent from other areas where it once was known to occur. Specimens in trade are usually ob-

tained from the wild, although the extent of national utilization and international trade are unknown. (A Mexican authority reports that this species is threatened by illegal harvest for American entrepreneurs.)

Pelecyphora aselliformis Ehrenberg. The "hatchet" cactus is known only from one general area in San Luis Potosi, Mexico, but may be extinct in the wild due to harvest for horticultural purposes. ESSA recommends its inclusion on Appendix I because of its rarity, restricted distribution, and vulnerability to commercial trade.

Pelecyphora strobiliformis (Werdermann) Fric. This cactus (having no common name) is known from a few areas in Tamaulipas and Nuevo León. ESSA recommends the species for inclusion on Appendix I because of its rarity, restricted distribution, and high trade value. (A Mexican authority reports that overcollecting for American entrepreneurs is a major threat to the cactus.)

Primates

Cercopithecus diana (Linnaeus, 1758). Known as the Diana monkey or Diana guenon, this species occurs only in the coastal forests of West Africa from Gambia to Ghana (with unconfirmed reports of its occurrence in Cameroon and Zaïre). The monkey inhabits the middle and upper levels of mature primary forest, only rarely coming to the ground from tall trees. Timber cutting is a serious threat to the species, along with hunting for food (especially in Liberia) and taking for zoological exhibition. ESSA urges its addition to Appendix I because trade

Continued on page 5

Whooper Recovery

Continued from page 1

Aransas Refuge) remains a threat.

Shooting took its toll on the population from 1870-1920, when more than 250 kills were recorded. The most recent loss to shooting was a single incident in 1968. The recovery plan recommends daily patrols and close management of sandhill crane and waterfowl hunting areas, where migrating whoopers may be present. Also, hunter education programs in these areas should include training for whooping crane identification.

Recovery Plan Recommendations

Among the recovery methods outlined in the Service's plan are habitat management, law enforcement, captive propagation and cross-fostering. Although the availability of nesting habitat in the Wood Buffalo Park does not appear to be limiting the whooper's expansion, the loss of wintering habitat will eventually prevent population increases. It is the opinion of the recovery team that the Aransas Refuge and nearby habitat can support at least 40 nesting pairs and associated sub-adults and birds of the year. (There are currently 76 birds in this population.) There is believed to be sufficient habitat on the remainder of the Texas coast to support several hundred whooping cranes, if they would use it.

The plan also calls for identification and protection of stopover sites along the migration route. Little is known about the consistency of site use by whoopers in migration. An important goal of the plan is to determine which areas are most often used and why.

Management practices should be applied first to areas designated as Critical Habitat or other areas of concern, according to the plan. Critical Habitat for the whooper (F.R. 5/15/78) consists of nine refuges and migratory stopover areas used by the two wild populations (See June 1978 BULLETIN). Included in the designation are Platte River bottoms between Lexington and Dehman, Nebraska, one of the principal resting and feeding areas for the whooping crane during its spring migration. It is one of the last suitable areas for whoopers to rest before the last leg of their 2,600-mile journey back to Wood Buffalo Park.

The recovery plan calls for captive propagation of whoopers to produce eggs which can be used in a cross-fostering program. Experimental efforts involving egg transfers have also shown signs of success. In a cooperative effort between our Service and the Canadian Wildlife Service (CWS), eggs

from whooping crane nests in Wood Buffalo Park and those captive-produced at Patuxent are being transferred to wild sandhill crane (*Grus canadensis*) nests at Grays Lake Refuge. Once placed in the nest, the eggs are incubated and hatched, and the whooper chicks are reared and reintroduced into the wild by their sandhill crane foster parents.

Experiments at Patuxent indicate that parent-reared birds possess wild characteristics even after several years in captivity, and may be capable of making the transition from captivity to the wild. Depending on the results from release experiments with parent-reared sandhill cranes, these parent-reared whoopers will either remain with the captive flock at Patuxent, or be released at Grays Lake to bolster that population.

At present, 15 whoopers are located in the Rio Grande Valley, the wintering grounds of the Grays Lake sandhill cranes. Results from the Grays Lake experiment will aid future transplantings designed to establish new, self-sustaining populations and insure the long-range security of the whooping crane. Our Service and the CWS plan to implement a program to establish and manage addi-

tional whooping crane populations.

Additional objectives of the recovery plan include:

- reducing mortality. Little is known about whooper mortality. The extent to which accidents, shooting, human disturbance, and the availability of food or habitat during migration affect whooping cranes is unknown. A high mortality among sub-adults exists for unidentified reasons. Finding the reasons for these losses and a method of remedial management are high priorities in the recovery plan.

- determining desired distribution. The Whooping Crane Recovery Team will examine biological and other factors and make recommendations on the most appropriate distribution of the species. Not only will they attempt to determine a desired distribution and location for individual populations, but also the ultimate continental distribution of the whooping crane in relation to the biological needs of the species.

- improving public information. Because the whooping crane will never be an abundant species, preservation and eventual recovery will require the interest and concern of an informed public.



Immature whooping crane (foreground) with Grays Lake sandhill cranes on wintering grounds in New Mexico's Rio Grande Valley.

Photo by Rod Drewien

Species Considered For Appendix I

Continued from page 3

for purposes of display represents a potentially severe threat to declining populations. (The Diana monkey is listed as Endangered under the 1973 Act.)

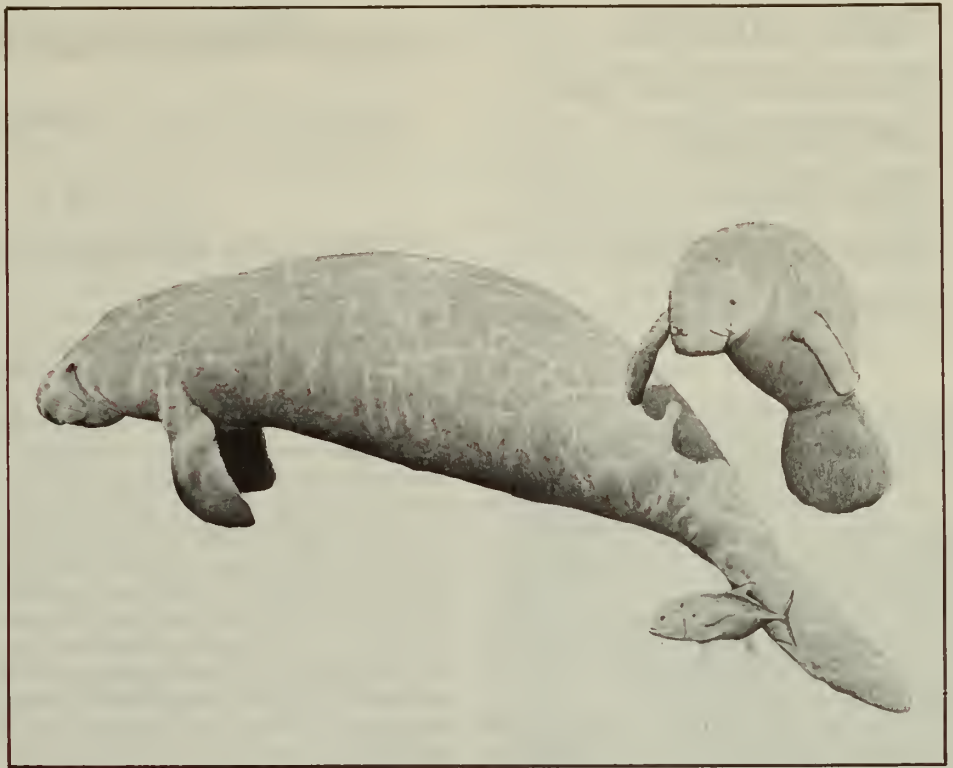
Lagothrix flavicauda (Humboldt, 1812). The yellow-tailed or "Hendee's" woolly monkey is native to portions of the Departments of Amazonas and San Martin in Peru, where it is limited to the montane rain forest. Its habitat is being cleared for agriculture, and is becoming increasingly accessible due to road construction. The species once occurred in such remote areas that only five specimens were known to scientists by 1926, and was not seen again until 1974 when an expedition found another five specimens. Locally, the monkey is hunted for food, and is exploited for use as a pet and in taxidermy. While international trade in this species is not known, ESSA notes that there has been extensive trade in Humboldt's woolly monkey (*Lagothrix lagotricha*), a closely related species, for use as a pet. Peru protects the yellow-tailed woolly monkey as an endangered species.

Papio (-Mandrillus) sphinx (Linnaeus, 1758). The mandrill occurs in a limited area of West Africa, from the Sanaga River in Cameroon to the Congo River between Congo and Zaire, and eastward to the southwestern border of the Central African Republic. Although population estimates are not available, ESSA reports that the species is declining in Cameroon and Equatorial Guinea. The species, which lives primarily in forest areas, is hunted for food and killed for raiding crops, and is traded for zoological exhibition. Extensive deforestation has also reduced habitat essential to the mandrill's survival. (The species is listed as Endangered under the 1973 Act.)

Information and Comments Solicited

Persons having any information about the above species, including their distribution, population status, national utilization, international trade, potential threats to the species from trade, protection afforded them, or information on similar species, are invited to submit data and comments to the Director, U.S. Fish and Wildlife Service, Wildlife Permit Office, Washington, D.C. 20240, through March 4, 1980.

Following a review of available information, the Service will publish a notice of its determinations indicating which species will be the subject of formal proposals to the Convention parties.



Regulations to Benefit Manatees on Merritt Island, Chassahowitzka

Part of a continuing campaign to boost the recovery of Florida's Endangered sirenian, the Service has put in force new public use regulations designed to protect West Indian manatees (*Trichechus manatus*) and other protected species within the Merritt Island and Chassahowitzka National Wildlife Refuges.

An estimated 60 percent of all manatee deaths has been attributed to human-related activities, with two-thirds the result of boat-related accidents (see the January 1980, November 1979, and January 1979 BULLETINS). However, evidence has shown that, when given adequate time, manatees can move out of the path of approaching boats and avoid injury.

The Service's Merritt Island Refuge is used by a significant proportion of the declining manatee populations, according to recent surveys. The Service has therefore designated speed restrictions and closed areas within the refuge (to be enforced as soon as affected areas are properly posted) to minimize manatee mortality (F.R. 2/7/80). Under the new rules, water-related public use on Merritt Island will be permitted subject to the following restrictions:

- Boating speeds are restricted to "Idle Speed"* in Bairs Cove and KARS Marina.

- Boat speeds are restricted to "Slow Speed/Minimum Wake" ** in

Haulover Canal, KARS Marina Channel, and Banana Creek.

- An area approximating two square miles in the Banana River east of the Saturn Barge Canal and south of the NASA Parkway is closed to all public use of motorized watercraft from April 1 through November 14 annually.

- Air thrust boats are not allowed on the refuge waters.

- Life preservers must be worn by persons in crafts less than 16 feet long while boats are under power in the Indian and Banana Rivers, and Mosquito Lagoon within the refuge.

- Boat launching on the refuge between sunset and sunrise is permitted only at Beacon 42 Fish Camp and Bairs Cove.

On the Chassahowitzka Refuge, where power boat speed restrictions are designed to protect manatees as well as three species of sea turtles and other listed birds and reptiles, the main channel of the Chassahowitzka River between the east refuge boundary and the Hernando County line has been designated a "Slow Speed/Minimum Wake" ** area from May 1 through August 31 in 1980 and 1981 (F.R. 2/22/80).

* The minimum speed that will maintain the steerage way of a motorboat.

** Any through-the-water speed (not over-the-bottom speed) less than 8 m.p.h. and slow enough that the boat is neither "planing" nor moving with an elevated bow.

Feral Animal Removal Part of Settlement Involving San Clemente Island

Following a suit filed last year against the U.S. Government by Fund for Animals *et al*, the U.S. District Court for the Central District of California has ruled on a settlement of parties, thereby enjoining the aerial shooting of goats, pigs, and deer that have been trampling and/or eating some of San Clemente Island's rarest animal and plant life.

One of the Channel Islands off the coast of southern California, San Clemente Island has been termed the most biologically distinctive coastal island owned by the United States. In past years, this unique habitat—supporting many species and subspecies that do not occur anywhere else—has been severely modified primarily due to the introduction of feral animals (as well as exotic plants). On August 11, 1977, the Service placed four plants, two birds, and a lizard (all indigenous to the island) on the list as Endangered or Threatened species in an effort to prevent further declines. (More than a dozen additional plant species are candidates for Federal protection on San Clemente.)

During recent years, the Navy has removed—through sport hunting, trapping, herding, and fencing—nearly 16,500 goats, 600 pigs, and 150 black-tailed deer from the island. Public outcry (culminating in the subject suit) abruptly halted the operation, however, and the surviving populations have since multiplied.

In a May 1979 biological opinion, the Fish and Wildlife Service stated that a comprehensive exotic animal and plant removal plan proposed by the Navy (involving aerial and ground shooting of all feral goats and deer, as well as the use of foot snares to capture pigs) would "contribute to the conservation of listed plant and animal species and the overall island ecosystem." According to the Service, "the complete removal of the last remaining individuals is of critical importance to the success of this eradication program, as population growth can increase rapidly and exponentially in response to release

Continued on page 8

Rulemaking Actions

January 1980

Proposals Withdrawn for Toad and Nine Fishes

Subsequent to its December 10, 1979, notice (see the January 1980 BULLETIN), the Service has announced the withdrawal of three additional proposals to list and designate Critical Habitat for nine fishes and one species of toad (F.R. 1/24/80).

Under 1978 amendments to the Endangered Species Act, proposed listings not finalized within two years of publication in the *Federal Register* must be withdrawn. However, the amended legislation authorized a suspension of all withdrawals (after enactment), or until November 10, 1979.

Expired proposal affected by this notice include:

Proposed Threatened status and Critical Habitat for the black toad *Bufo exsul* (F.R. 3/11/77)

Proposed Endangered status and Critical Habitat for the Cahaba shiner, *Notropis* sp., goldline darter, *Percina aurolineata*, spring pygmy sunfish, *Elassoma* sp., and pygmy sculpin, *Cottus pygmaeus* (F.R. 11/29/77)

Proposed Endangered status and Critical Habitat for the Waccamaw darter, *Etheostoma perlongum*, Waccamaw silverside, *Menidia ex-tensa*, Waccamaw killifish, *Fundulus waccamensis*, Barrens topminnow, *Fundulus* sp., Ouachita madtom, *Noturus lachneri* (F.R. 12/30/77)

Affected States include Alabama, Arkansas, California, Georgia, North Carolina, and Tennessee.

Public Hearing on Critical Habitat For the Desert Tortoise

In the interest of insuring full public participation on the reproposal of Critical Habitat for the Beaver Dam slope population of the Desert tortoise (*Gopherus agassizii*), the Service will be scheduling a public hearing and reopening the public comment period.

Requests for a public hearing (as allowed under 1979 amendments to the Endangered Species Act) were received prior to and during the January 10 public meeting on the Service's Critical Habitat reproposal (F.R. 12/7/79).

We regret that details on the location and time of the hearing were unavailable as this BULLETIN went to press. For further information on the hearing and extended comment period, please contact Mr. Bill White in the Service's Salt Lake City area office (801/524-5634).

—State Reports—

Michigan Plants in Danger Exhibit on Tour

The University of Michigan Matthaei Botanical Gardens, funded by the Michigan Council for the Arts and several conservation organizations, has recently produced a traveling exhibit entitled "Michigan Plants in Danger." The exhibit explains problems affecting Michigan's 16 endangered, and 192 threatened, species—now legally protected.

Through a series of comparative photographs and narratives, the exhibit attempts to familiarize the audience with the concepts of plant endangerment and conservation. Five reasons why a plant may become rare, threatened, or endangered are addressed: habitat destruction, exploitation by man, habitat restriction, distribution patterns, and devastation by introduced and natural enemies. The concluding section provides suggestions on how concerned citizens may take action to protect plant species that are in danger. These include reestablishment of selected species, membership in botanically-oriented groups, and support of appropriate legislation. (A color brochure also accompanies the exhibit.)

For most of the first year, the exhibit will be scheduled for month-long visits to larger Michigan nature centers and shown at statewide special events. Eventually it should be available to any interested Michigan group. (The Matthaei Botanical Gardens staff hopes that all States may have the opportunity to develop similar displays. They have learned a great deal about production options and are glad to pass on their knowledge to other botanical conservationists.)



"Michigan's Plants in Danger" exhibit in lobby of Matthaei Botanical Gardens, University of Michigan.

Eagle Day Interpretive Programs a Success in Missouri

During the last two winters the Missouri Department of Conservation has offered a series of special "Eagle Day" Interpretive Programs at various locations across the state.

"Bald eagles are an ideal subject for programs like this," Larry Gale, Director of the Department says. "They have predictable wintering habits, so they're easy for people to see, while naturalists can inform people about endangered species philosophy, pesticide pollution, habitat destruction, and the role of predators like eagles in the environment."

The programs have been tremendously popular with Missouri's public. The first year nearly 1100 people attended Eagle Days even though several were cancelled or postponed due to winter storms.

The Department handed out a participant survey at Eagle Days to get a handle on just who came and what they got out of it. Results of the survey showed broad-based support for this type of program. All kinds of people came—hunters made up 32% of the participants and fishermen 67%. That's over twice what would have been expected from a straight cross-section of the Missouri population. In addition, 17% of the participants classified themselves as birders, 61% classified themselves as occasional bird watchers and 26% said they belonged to one or more wildlife interest groups. It was particularly interesting to note that 5% indicated no previous interest in wildlife at all, and over half of the participants had never before seen an eagle.

The eagles themselves were more

or less oblivious to the people. Naturalists were able to show participants many aspects of eagle behavior such as fishing, feeding on injured waterfowl, and aggressive interactions.

Eagle Days have proven so successful, the Department is putting several similar programs on the planning table. "This kind of program has proven itself beneficial above and beyond the participants themselves through the media and word-of-mouth support they have generated for the Department and its programs," Gale said.

Missouri Department of Conservation photo



Paul Price of Dickerson Park Zoo, Springfield, Missouri, with "Omega," a rehabilitated female bald eagle exhibited during Missouri Department of Conservation "Eagle Days."

New York Fish Surveys

New York's Department of Environmental Conservation has tentatively identified 56 species of fish that are "of special concern" according to available records.

Under the direction of Dean Bouton, the Department's endangered fish program has contracted two major survey efforts (through Fiscal 1981) to determine if listing is warranted for any of the State's declining fishes.

(Although believed extinct, the blue pike (*Stizostedion vitreum glaucum*) and longjaw cisco (*Coregonus alpenae*)—which occurred in Lake Erie and Ontario—remain protected in New York. The Endangered shortnose sturgeon (*Acipenser brevirostrum*), a marine species occurring along the Atlantic Coast, has been the subject of recent power plant impact studies in the State.)

Photo by Bob Kalmbach

Feral Animal Removal

Continued from page 6

from inter- and intra-specific competition." (The Service opinion further stressed the importance of a rigorous exotic plant removal program to complement feral animal removal, thereby boosting the recovery of native fauna and flora.)

Under the January 23 order, 60 percent of all feral animals are to be counted and line-trapped within a 90-day period (with the remainder taken within one year) and removed from the island by barge. The order further calls for the preparation of an Environmental Impact Assessment by the U.S. Navy on the effects of its military operations on all forms of plant and animal life, archeological ruins, and Indian burial sites on the island.

The Navy is expected to reinstate consultation on its new plan in the near future.

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	35	251	286	3	21	24
Birds	67	145	212	3		3
Reptiles	11	50	61	10		10
Amphibians	5	9	14	2		2
Fishes	29	11	40	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	49		49	7	2	9
Total	228	469	697	44	23	67

Number of species currently proposed: 35 animals
(no plants)

Number of Critical Habitats listed: 35

Number of Recovery Teams appointed: 66

Number of Recovery Plans approved: 31

Number of Cooperative Agreements signed with States:
34 (fish & wildlife)
3 (plants)

January 31, 1980

New Publications

Proceedings of the First South Carolina Endangered Species Symposium is the first attempt to list and describe the status of threatened and endangered plants and animals in the State. This 200 page book is based on a 1976 symposium held in Charleston. Copies are available from the Nongame-Endangered Species Section, South Carolina Wildlife and Marine Resources Department, P.O. Box 167, Co-

lumbia, South Carolina 29202, for \$6.50 plus \$.50 for handling.

The January 1980 issue of *Rhodora* contains the proceedings of the symposium, "Rare and Endangered Plant Species in New England," which was sponsored by The New England Botanical Club. Order from NEBC Symposium, Department of Botany and Plant Pathology, Nesmith Hall, University of New Hampshire, Durham, New Hampshire 03824. Make checks payable to NEBC symposium. The price is \$8.00.

Correction—Bobcat Exports

In the December 1979 BULLETIN, we inadvertently listed South Dakota as one of the States from which exports of bobcat pelts taken during the 1979-80 season had been halted under a December 12 U.S. District Court order. Such exports from South Dakota *are allowable* under the terms of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

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GOVT. DOCUMENTS
DEPOSITORY ITEM

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SERVICES ADOPT NEW LISTING REGULATIONS

Procedures for listing, delisting, and reclassifying species, determining Critical Habitat, the handling of petitions, and other related activities called for under the amended Endangered Species Act of 1973 have been adopted with the publication of final "Section 4" regulations (F.R. 2/27/80).

Issued jointly by our Service and Commerce's National Marine Fisheries Service (the two agencies respectively charged with administering the law for terrestrial and marine species), these final rules implement many of the changes and additional requirements imposed by 1978 and 1979 Amendments to the Endangered Species Act (see the January 1980 and October 1978 BULLETINS). The regulations had been proposed on August 15, 1979 (see the September 1979 BULLETIN), although minor subsequent changes under the 1979 amendments have also been incorporated in this comprehensive document.

We will review significant sections in the following pages, although you may wish to order the complete text of the regulations (supplies are limited) from the Office of Endangered Species, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

Listing and Related Definitions

Essentially all provisions pertaining to the listing process (with the exception of Sections 17.11, 17.12, 17.13, and 17.94, which actually include the U.S. Lists of Endangered and Threatened Wildlife and Plants and designated Critical Habitats) have been incorporated under a new Part 424 of Title 50 of the Code of Federal Regulations.

Definitions under this new part include standard language provided under the 1973 law as well as terms reflecting changes brought by the recent amendments. The following definitions for Endangered and Threatened remain unchanged:

Endangered: A species which is in danger of extinction throughout all or a significant portion of its range.

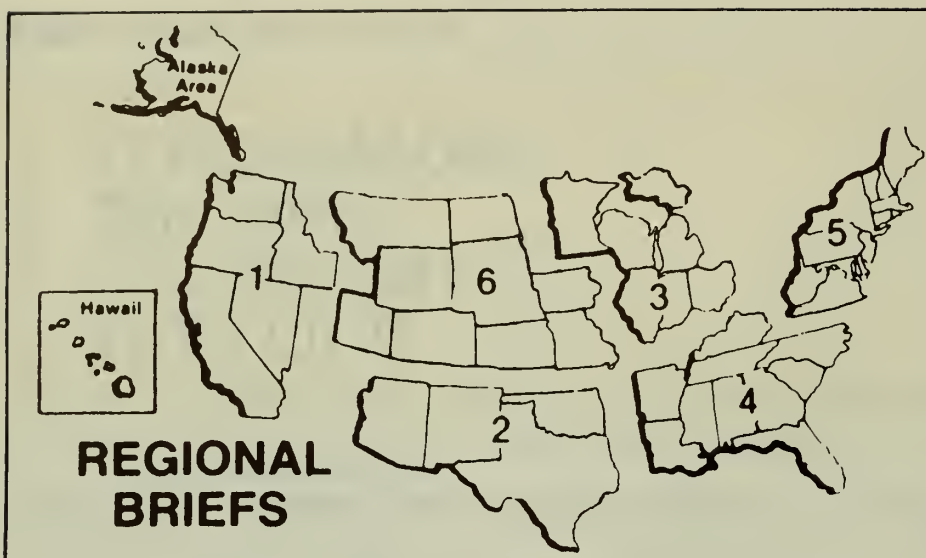
Threatened: Any species which is likely to become an Endangered species within the foreseeable future
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U.S. Fish and Wildlife Service Photo

One of three dusky seaside sparrows captured last year on the St. Johns National Wildlife Refuge, this bird may soon be part of an intense breeding project geared to recovering its dwindling numbers. (See our separate "Special Report.") Human efforts may involve dusky semen preservation and artificial insemination, with experimentation soon to be underway on surrogate sparrows at the Patuxent Wildlife Research Center.

See Story Page 4



Endangered Species Program regional staffers have reported the following activities for the month of February.

Region 1. The Antioch Dunes Recovery Plan (covering Lange's metalmark butterfly (*Apodemia mormo*

langei), Contra Costa wallflower (*Erysimum capitatum* var. *angustatum*), and Antioch Dunes evening-primrose (*Oenothera deltoides* ssp. *howellii*) was submitted to Washington for final approval. The April 1980 BULLETIN

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U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia **Region 6:** Colorado, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Alaska Area:** Alaska

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will feature a report on the Service's recent acquisition of this unsettled ecosystem.

The Portland Chapter of the Audubon Society, along with the Fish and Wildlife Service, Oregon Department of Fish and Wildlife, and National Wildlife Federation, sponsored a bald eagle workshop in Klamath Falls, Oregon. About 200 people attended, including representatives from six western States. Workshop participants went to the Klamath Basin, which has the largest wintering concentration of bald eagles (*Haliaeetus leucocephalus*) in the lower 48 States.

Region 2. The San Bernadino Ranch Renovation and Management Plan was initiated by eliminating exotic mosquito fish (*Gambusia affinis*) to protect-native Endangered Gila topminnow (*Poeciliopsis occidentalis*) from competition or hybridization. Staff members met with the Arizona Bureau of Geology and Mineral Technology regarding potential impacts of the renovation plan on their projects, and geo-thermal exploration north of the ranch (which is located in southeastern Arizona, near the Mexican border).

Jack Woody served as U.S. representative and panel member at the Mexican Symposium on Wildlife Management Programs in Desert Environ-ments.

An interagency cooperative agree-ment was reached on studying nesting bald eagles on the Salt and Verde Rivers in Arizona. Participants in the agreement are our Service, Salt River Project, Arizona Water Commission, Rocky Mountain Range and Forest Experiment Station of the Forest Service, the Maricopa Audubon Society, Water and Power Resources Service, and Arizona State University, which will be doing the actual work.

Region 4. Regional and other Serv-ice personnel participated in a public meeting at Gadsden, Alabama, on Feb-ruary 7 to discuss listing of the green pitcher plant (*Sarracenia oreophila*) as Endangered (effective April 7, 1980). There were nearly 200 people in at-tendence at the meeting, where time was devoted to the presentation of formal statements for the record as well as to question and answer ses-sions. While a number of concerns were expressed over the listing, most were prompted by misconceptions of the Service action. (For example, no Critical Habitat has been designated.) A number of people questioned the basis for the listing, but no new bio-logical or other data was presented. (A report of the public meeting is con-tained in the March 24, 1980, *Federal Register*.)

On February 5, 61 snail darters (*Percina tanasi*) out of 106 being held at Tennessee's Eagle Bend Fish Hatchery died of apparent gas bubble disease. The survivors were moved to Morristown State Hatchery where other darters were placed after being re-

moved from the Little Tennessee River prior to the closure of Tellico Dam (see the October 1979 BULLETIN).

Region 6. A meeting held in Billings, Montana, on threatened and endangered plants resulted in the formation of an Endangered Species

Committee aimed at improving communication between botanists and providing direction and impetus for the State's endangered and threatened plant program. The committee consists of Federal, State, and university personnel.

SERVICES ADOPT NEW LISTING REGULATIONS

continued from page 1

throughout all or a significant portion of its range.

Of interest, however, are several new or revised definitions:

Critical Habitat: (1) The specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (i) essential to the conservation of the species and (ii) which may require special management considerations or protection, and (2) specific areas outside the geographical area occupied by a species at the time it is listed upon a determination by the Director that such areas are essential for the conservation of the species.

Species*: Any species or subspecies of fish or wildlife or plant, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature. (Excluded are those species of the Class Insecta determined by the Director to constitute a pest whose protection under the provisions of the Act would present an overwhelming and overriding risk to man.)

Public hearing: An informal hearing to provide the public with the opportunity to give their comments on a proposal to designate Critical Habitat and, if appropriate, the accompanying proposal to list a species.

Public meeting: An informal meeting between Service representatives and the public that permits an exchange of information on a proposed rule.

Special management considerations or protection: Any methods or procedures useful in protecting physical and biological features for the conservation of listed species.

* In determining whether a particular taxon is a population or species for the purposes of the Act, the Services will rely on standard taxonomic distinctions and the biological expertise of the Service and the scientific community concerned with that group of taxa.

Conservation: To use and the use of all methods and procedures which are necessary to bring any Endangered species or Threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Listing Criteria

Under slightly revised criteria, a species may be listed on the basis of the best scientific and commercial data available (after a review of the species' status) because of any one or more of these factors:

(1) The present or threatened destruction, modification, or curtailment of its habitat or range;

(2) Utilization for commercial, sporting, scientific, or educational purposes at levels that detrimentally affect it;

(3) Disease or predation;

(4) Absence of regulatory mechanisms adequate to prevent the decline of a species or degradation of its habitat; and

(5) Other natural or manmade factors affecting its continued existence.

(The fact that a species is listed under the Convention on International Trade in Endangered Species of Wild Fauna and Flora or similar international agreements may also constitute evidence that a species should be considered for listing as Endangered or Threatened.)

A species may be removed from the U.S. List based on the best available data indicating either its (1) extinction, (2) recovery, or (3) a finding that orig-

inal data for classification were in error.

Critical Habitat Determination

As provided under 1978 Amendments to the Act, Critical Habitat shall be designated, *to the maximum extent prudent*, at the time a species is listed. Under the new regulations, proposed Critical Habitat areas shall be specified at the time a species is proposed for listing *unless* (1) identification of Critical Habitat areas would be expected to increase the degree of threat to the species or (2) such designation would not be beneficial to the species.

Under the regulations, all physiological, behavioral, ecological, and evolutionary requirements essential to the conservation of the species and which may require "special management considerations or protection" will be considered in determining Critical Habitat. These requirements may include:

1) Space for individual and population growth and for normal behavior;

2) Food, water, air, light, minerals, or other nutritional or physiological requirements;

3) Cover or shelter;

4) Sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and generally,

5) Habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of listed species.

In considering the Critical Habitat designation, the Services will focus on the biological or physical constituent elements within the defined area which are essential to the conservation of the species, and will identify known primary constituent elements (such as roost or feeding sites, vegetation types, etc.) along with any Critical Habitat designation.

All significant activities which would either affect an area considered for designation as Critical Habitat or

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EXTINCTION OR SURVIVAL?

SEMEN PRESERVATION AND ARTIFICIAL INSEMINATION COULD MAKE THE DIFFERENCE

Thirty-nine years ago, when the total population of whooping cranes (*Grus americana*) in existence dropped to a critical low of 21 birds, no one ever dreamed that our human efforts would put this species back on the road to recovery. But, thanks to specialists bent on halting its decline, 119 of these majestic birds survive in North America—some in their original migratory range, others as part of a second experimental flock, and still another 24 in captivity as part of a Service incentive to boost the crane's dwindling breeding success.

Captive propagation was initiated in 1967 to bolster the wild whooper population—still vulnerable despite intense habitat management on its behalf. Cranes in residence at the Patuxent Wildlife Research Center in Maryland were not producing fertile eggs when Dr. George Gee started as research physiologist for the Service one year later. While semen production appeared normal, most of the birds simply were not copulating—a behavioral rather than physiological problem.

Without artificial insemination—begun at that time as a necessity to maintain crane propagation—our captive breeding efforts would have bordered on failure.

Techniques Improving Fertility

Used as a successful propagation tool since 1969, artificial insemination is now increasing the fertility of whooping cranes, Mississippi sandhill cranes (*Grus canadensis pulla*), Aleutian Canada geese (*Branta canadensis leucopareia*), and other Endangered wildlife under the Service's Endangered Wildlife Research Program.

Working primarily with birds, Gee and his co-workers have perfected a variety of techniques for collecting semen—including massage, electro-mechanical stimulation, artificial vaginas, and even natural mating attempts using teaser animals or (for imprinted animals) humans. The semen

is then inseminated using one of two principal methods: everting the oviduct, with the sperm inserted into the vagina, or (without eversion of the oviduct) depositing semen directly into the middle chamber of the cloaca.

Through their methods, all reproductive whoopers and Mississippi sandhills in captivity at Patuxent have been artificially inseminated. Fertility rates of 85 percent with fresh, uncontaminated semen have been consistently achieved with formerly infertile pairs.

Pioneers in "Cryobiology"

With the captive breeding program well underway, Gee soon recognized the need to preserve a stockpile of crane semen—not only to supplement quantities produced by captive males, but also to insure the maintenance of natural genetic diversity which can be lost through inbreeding.

Working with Dr. Tom Sexton of the Department of Agriculture's Beltsville Agricultural Research Center, Gee was able to apply Sexton's methods—developed in 1976 for the cryogenic preservation (storage in the frozen state) of poultry semen—in his own work with cranes. Within two years, using greater sandhill cranes (*Grus canadensis tabida*) as surrogates, Gee and Sexton were able to unlock the magic formula. In 1978, artificial insemination of greater sandhills with semen frozen for nearly two months resulted in fertile eggs (6 out of 27 laid) and the production of three healthy chicks.

Using semen collected prior to and during egg production at Patuxent, Gee has since perfected techniques for freezing the genetic material of whoopers and Mississippi sandhill cranes, and the results have shown promise. While fertility rates have not been as high as those achieved using fresh semen, he has attained 30 percent fertility (with five birds) using frozen-thawed semen.

Gee is not satisfied with these lower success rates, however, striving for 60

percent fertility as the minimum acceptable level for propagation purposes. "There really isn't any theoretical reason for the frozen-thawed rates to be any different from the fresh. The obvious solution may be to increase sperm numbers per insemination." Gee thinks they may have dropped below the "critical fertile level" (likely between 50,000 and 100,000 sperm for whoopers and sandhills). Not all sperm survive freezing, however, so they hope to boost fertility this year by increasing the dose and improving insemination techniques. With estimates of 35 to 60 percent sperm survival rates, the researchers will be inseminating both whoopers and sandhills using a full tube of semen (containing three ejaculations) to insure adequate sperm levels.

Genetic Diversity: Key to Survival

As we now know, the adaptability—if not the survival—of an animal population inevitably depends upon the maintenance of a diverse gene pool. Although captive propagation may insure the survival of a species for many generations, it leads eventually to loss of the genetic diversity that has proven essential to survival of the species throughout its evolution.

The maintenance of all alleles [those genetic components of the chromosome carrying inheritable information] or "heterogenicity," in some balance similar to that which occurred before the populations declined can be vital. Although they may be represented in small numbers, a major change in the environment could suddenly favor certain alleles—and the natural evolutionary process would then select for the expansion of this small proportion. In captivity, when you have selected certain individuals from a population, this normal distribution disappears and some genetic variation will be lost. Although this can be caused by inbreeding, loss in variation of captive populations also results simply because the



U.S. Fish and Wildlife Service Photo

Artificial insemination proved indispensable to the captive propagation of whooping cranes at Patuxent, where eggs laid by captive whoopers without insemination were infertile. Here, Gee and Glen Smart (formerly with Patuxent's Endangered Wildlife Research Program, now based in Washington) inseminate one of the first whoopers to produce fertile eggs at Patuxent, with semen from her mate. (Semen is collected and the females inseminated three times a week, using frozen semen only when the fresh is not available.)

environment can no longer "select" for adaptive alleles.

The ideal way to maintain diversity in captive flocks is through reintroducing wild animals—or, if not the animals themselves, then their genetic material. "When we see a population

in rapid decline, we should go out and get as much semen as possible and preserve it." Then, Gee says, "we could go back to our captive flock and reintroduce that semen, which is still representative of that original population that was much larger only a short

time ago." Once collection and freezing methodologies are worked out, sperm taken from just a few different individuals each year would allow reintroduction of a broad genetic base back into a population—diversity that could later mean the difference between extinction or survival.

Hope for the Dusky

Gee hopes to work this year to perfect methods for the collection, insemination, and preservation of sea-

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SEMEN PRESERVATION AND ARTIFICIAL INSEMINATION

continued from page 5

side sparrow semen (using the Scott's seaside sparrow, *Ammospiza maritima peninsulae*, as a surrogate) for eventual application with the dusky seaside sparrow (*A. m. nigrescens*). Possibly the first Endangered passerine bird to become part of a captive breeding project (see our April 1980 "Special Report"), the dusky's fate may depend largely on success with these techniques, should female adults or nestlings be found this year.

While the semen volume for individual sparrows would be small (.01 to .05 ml), Gee believes samples can be prepared for frozen storage and that

the bird's physiology could even work to his advantage. "Because of their small body size, they have apparently become adapted to accumulate large doses of semen right where they need it." The male duskies have a cloacal protuberance, where the vas deferens is looped around the dorsal lip of the cloaca. Semen may be easily taken by massage from the swollen protuberance during the breeding season—a practice already accomplished in the field.

Although longevity should not be a problem (one dusky has lived for 9 years), Gee fears it could take 3 or more years to learn how to successfully freeze dusky semen. He hopes to accelerate the process, perhaps cut-

ting the time in half by bringing his surrogate seashores into production more frequently through day-length and temperature manipulations.

If all goes well, freezing techniques could then be more readily developed for other Endangered passerines like the Cape Sable seaside sparrow (*A. m. mirabilis*), the dusky's cousin from the Florida Everglades.

Sperm Bank: The Best Investment

For the dusky, the California condor (*Gymnogyps californianus*), and many other critically Endangered species, time is indeed the prime obstacle to recovery. But Gee and others like him believe we can buy time—through little investment and effort—by storing the

The equipment necessary to freeze and store semen from whoopers and other birds requires little space in Gee's laboratory at the Patuxent Center. Freezing vessels, equilibrators, freezing units, and storage tanks are relatively inexpensive, and much of the equipment necessary for semen collection and freezing may be carried in the back of a station wagon.



U.S. Fish and Wildlife Service Photo

genetic material so critical to a species' survival.

Many types of cryogenic tissue storage have been developed in the last 40 years, with most designed for practical use in human and domestic animals. Viable sperm have been recovered from frozen semen in man, cattle, dogs, cats, elephants, bison, horses, trout, pigs, sheep, goats, chickens, turkeys, camels, moose, deer, llama, yak, monkeys, chinchilla, and bears.

Tissues can be preserved with little or no loss of vigor for decades, even centuries, according to Gee who says there should not be any decrease in sperm viability as long as its organic constituents remain frozen in place—generally at -196°C .

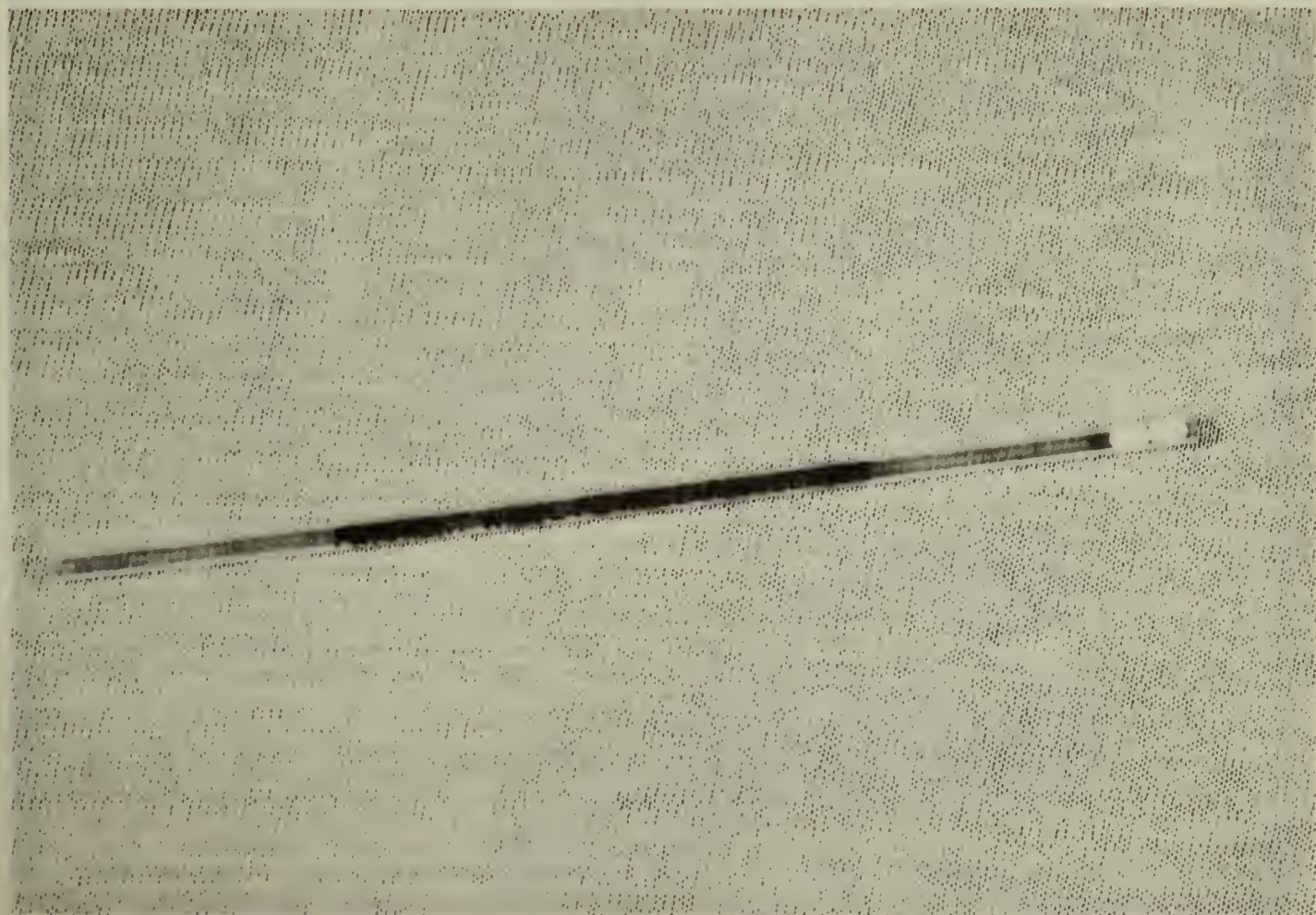
Of all the techniques used in endangered species conservation, a semen bank would be the least damaging to a wild population and perhaps the best safeguard. Preservation of an endangered population could, after all, depend on our ability to help it along by maintaining its genetic diversity in times of environmental stress. "In our particular situation, in working with Endangered species," Gee says "we should consider all the possibilities and think about how we can make use of developing technologies." For example, he advises the frozen storage of tissues from the duskies for use later, should we ever learn to clone them [i.e., reproduction of duplicate organisms by tissue culture].

A universal storehouse of semen from declining species could be one of our best investments toward the long-term conservation of Endangered populations. While techniques for obtaining, handling, and preserving semen would have to be worked out for each species, Gee feels the time for establishing a centralized Endangered species sperm bank has arrived. "How thankful we may be to have stockpiled that essential source of diversity—perhaps our last hope for restoring a population as an adaptable part of a rehabilitated environment."

Without it, we might some day look back on future failures as we have with the passenger pigeon—a species apparently ideally suited for captive propagation. While the passenger pigeon has been lost to mankind, it is not too late to know the importance of maintaining these irreplaceable gene pools—materials that could later be used when the techniques are there.

As Gee points out, "If you had it, and it did happen, wouldn't you feel good."

Great care must be exercised in the handling of semen as freezing rates are critical to viability. Once collected and diluted, semen is cooled to near freezing for up to 4 hours, then is further diluted with cryoprotectants and siphoned into a plastic straw (like the one above) labelled for each donor bird. After a brief equilibration period, the 50°C sample is cooled to -20°C at the rate of 1°C per minute, then to -80°C at 50°C per minute, and finally to -196°C as rapidly as possible, where it is stored in liquid nitrogen. (The samples are gradually thawed before insemination.)



SERVICES ADOPT NEW LISTING REGULATIONS

continued from page 3

which are likely to be affected by such a designation will be identified in any Critical Habitat proposal. The "reasonably probable economic and other impacts" of such a designation shall also be considered, and the Services may exclude affected areas from the designation upon a determination that "the benefits of such exclusion outweigh the benefits of specifying the area as part of the Critical Habitat" (so long as failure to include such an area will not result in the extinction of the species—based on the best available data).

Critical Habitats will be defined using reference points and lines found on standard topographic maps, with the names of State(s), county(ies), or other local governmental units within which the designated area is located (although such political references shall not be construed to constitute the boundaries of the area). When a number of suitable habitats are located in close proximity, an inclusive area may be designated as Critical Habitat.

Critical Habitat shall be designated outside the geographical area presently occupied by the species only when determined necessary to ensure the conservation of the species.

Petitions, Data Sources, and Status Reviews

The Services shall review the status of a species prior to proposing a rule to list or remove a species, in consultation as appropriate with affected States, Federal agencies, interested organizations, persons, and country(ies).

Any interested person may petition the Services to review the status of a species with a view toward listing (or delisting or reclassification) under the Act. Petitions must be in writing and contain the date submitted, the name, signature, address, and telephone number, and the association, institution, or business (if any) represented by the petitioner.

The Services must acknowledge receipt of the petition within 30 days, and then determine whether substantial evidence has been presented in support of the measure recommended by the petitioner. In making such a determination, the Director shall consider whether the petition:

(1) Clearly indicates the administrative measures recommended, the scientific and any common name of the

species involved, and if appropriate, the precise area recommended as Critical Habitat;

(2) Contains detailed narrative justification for the recommended measure, describing, based on available information, the past and present numbers and distribution of the involved species, the particular threats confronting the species, and the features and importance of any recommended Critical Habitat;

(3) Indicates any beneficial or adverse effect on the species of designating Critical Habitat;

(4) Provides information on the status of the species over a significant portion of its range; and

(5) Is accompanied by appropriate supporting documentation such as a list of bibliographic references, reprints of pertinent publications, copies of written reports or letters from authorities, and maps, as appropriate.

If adequate evidence has not been presented, the petition shall be denied with explanation within 90 days. If, however, the Director finds that substantial evidence has been presented, he will: (1) promptly announce such a determination in the *Federal Register*, and (2) conduct (and publish in the *Federal Register*) within 90 days of receipt of the petition a status review of the species, indicating how the Service expects to proceed with the action. If the petition pertains only to Critical Habitat or a special rule for the conservation of a species, the Service will promptly conduct a review to determine the appropriateness of the requested action.

If the Director finds that the action requested by a petitioner appears warranted, but that available evidence is not definitive enough to justify a proposal, then he may publish a Notice of Review soliciting comments and additional data to determine if indeed such a proposal is warranted.

Proposals

When sufficient information is available, the Services will publish a proposed rule in the *Federal Register* summarizing the action under consideration as well as data on which the proposal is based and, if appropriate, factors affecting the species and likely effects of the rulemaking.

For proposals to list, reclassify, remove, or to designate Critical Habitat, a minimum of 60 days will be allowed for public comment, while a minimum of 30 days will be allowed for public

comment on all other proposed rules.

The Governors of all affected States and the governments of foreign countries in which the species occurs (or whose citizens harvest such species from the high seas) will be notified of the proposal and allowed 90 days to submit comments.

For all rules proposing listing, reclassification, delisting, or the designation of Critical Habitat, the Services shall offer the substance of the proposal for publication in appropriate scientific journals or newsletters.

For proposals to list, remove, or reclassify species (where no Critical Habitat is proposed), a public meeting shall be held within or adjacent to the affected area if requested within 45 days after date of publication in the *Federal Register*. (The specifics of such a meeting would then be published as a notice in the *Federal Register*.)

Any proposal specifying Critical Habitat must also contain a map of the proposed area and, to the maximum extent practicable, a brief description of activities that might occur in the area that may adversely modify such habitat or may be affected by such a designation.

A public meeting shall be held on all Critical Habitat proposals within, or immediately adjacent to, the proposed area within each affected State. (Notice of such meetings will be published in the *Federal Register*.) A public hearing is to be held after the public meeting in each affected State, if requested in writing no later than 15 days after the public meeting. The hearing would then be held promptly, but usually not sooner than 15 days after notice of the hearing is published in the *Federal Register*.

For all proposals involving Critical Habitat, the Director will (1) notify Federal agencies with jurisdiction in the area; (2) publish a summary of the proposal in a general circulation newspaper within or adjacent to the habitat within 30 days; and (3) give notice of the rule and related impact analyses to local governments in the area within 30 days.

Finally, the Services shall gather (and may solicit through a Notice of Review) all economic and other appropriate information on impacts associated with any Critical Habitat designation on significant activities in the area. A draft impact analysis will be prepared addressing the beneficial or

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CONDOR RECOVERY PLAN REVISED

Continuing its conservation efforts on behalf of the critically Endangered California condor (*Gymnogyps californianus*), the Service has approved a revised recovery plan for the species. The revised document updates the original California Condor Recovery Plan, approved in 1975, by incorporating a contingency plan for captive propagation and release to bolster existing condor populations and to establish new ones. The prime objective of the plan is to reach a minimum of 100 birds in the wild, with production equalling or exceeding mortality. Current wild population estimates are at 25 to 30 birds.

Historically, the California condor occurred along the Pacific coast from British Columbia to northern Baja California, Mexico. Although never abundant within historic times, the condor was widespread and regularly seen in the Nineteenth and early Twentieth Centuries. No population estimates are available prior to the 1940's, when the total was thought to be about 60 (apparently an underestimate since the population was figured at 50-60 condors in 1970—apparently representing a significant decrease from the 1950's).

Today, the condors occupy a wish-bone-shaped area in the mountains of central California from Santa Clara and Fresno Counties south to Ventura and Los Angeles Counties.

Steady human encroachment has crowded the condor out of portions of its range. As human presence increased, so did habitat destruction, shooting, and egg and specimen collecting. (Environmental contamination may have also contributed to the species' decline.) A minimum of 288 condors and 71 eggs were taken between 1792 and 1976, with as many as 111 condors and 49 eggs taken between 1881 and 1910 alone. This high mortality far exceeded the normally low productivity of the condor (with a single egg produced every other breeding season).

The road to recovery for the California condor will be a long one. According to the recovery team, condor populations are so low that the only hope for the species is through captive

propagation and release, with attempts at reestablishment as much as 20 years away. The plan calls for capture and marking and possible retention of a numbers of condors for captive propagation between September 1980 and March 1983. A chief criticism of this procedure, the team notes, is the uncertain success in releasing captive-raised condors into the wild. However, studies with turkey and black vultures have demonstrated possible procedures for releasing California condors. This spring, a number of captive-reared Andean condors (*Vultur gryphus*) will be released in Peru. The recovery plan calls for continued management of the captive flock of Andeans until propagation and release techniques are perfected.

To help insure the success of future releases, the recovery plan calls for identification and protection of present condor habitat and possible release sites. Other recommended actions include:

- (1) prohibiting motorized (including aircraft) activity and blasting in the vicinity of condor nest sites. (All recently used nests are in the Los Padres National Forest.)

- (2) restricting all human use within 0.5 miles of condor nest sites;

- (3) developing management plans for condor nesting, roosting, and feeding habitats;

- (4) encouraging open-space preservation and a continuing livestock economy through the condor range;

- (5) encouraging land managers to leave dead livestock on the range where it is available to condors (which only eat dead animals);

- (6) researching the effects of environmental contaminants on condor survival and reproduction;

- (7) monitoring the condor population; and

- (8) conducting a public information program.

For more information on California condor recovery, see the January 1980 BULLETIN and our May 1979 *Special Report*, "Last-ditch Contingency Plan Seen as Only Hope for California Condor."

SERVICES ADOPT NEW LISTING REGULATIONS

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detrimental economic and other impacts of the Critical Habitat designation, and will be available to the public upon publication of the proposal.

Final Rules

After consideration of all data and comments received, the Director will publish either a final rule or a notice of withdrawal of the proposal in the *Federal Register*.

Final rulemaking documents will summarize all comments received on the proposal as well as all data upon which the rule is based and likely effects of the ruling. For listing, delisting, reclassification, and Critical Habitat rulings, a summary of factors affecting the species will also be included. Critical Habitat determinations will contain descriptions of the boundaries of designated areas and appropriate maps,

and will briefly describe activities that might adversely modify the habitat or be impacted by such a designation.

Prior to finalizing Critical Habitat, a final impact analysis shall be prepared (incorporating all information and comments received) to analyze and discuss beneficial and detrimental economic and other impacts of possible Critical Habitat designations on significant activities in the area. This analysis will then form the basis for the Director's decision as to whether to exclude any area from the Critical Habitat—if determined that the benefits of excluding such an area outweigh the benefits of designating the area as Critical Habitat.

A final regulation adding a species to the U.S. List must be published not later than 2 years after such a rule was proposed. Otherwise, the proposal must be withdrawn (with notification in the *Federal Register* not later than 30 days after expiration of the period). Another proposal to add a species to the list which had been the subject of a withdrawn proposal may only be published when the Services determine

that "sufficient new information"* has been received to warrant a new proposal.

The Director will review each listed species at least once every 5 years to determine whether its classification remains warranted.

Emergency Rules

The Director may by emergency regulation take any action provided under Section 4 of the Act (that is listing, Critical Habitat designation, or special rule) if such a measure is warranted by the development of a significant risk to the well being of a species. Emergency rules shall become effective immediately upon their publication in the *Federal Register*, although the Governor of any affected State must be notified in advance. Such rules will remain effective for 240 days unless the Director determines that substantial evidence does not exist to warrant the regulation, in which case it shall be withdrawn.

New Format for Lists

Both U.S. Lists (for wildlife and plants) have been restructured to indicate whether or not Critical Habitat has been designated for the species. A column entitled "Historic Range" has been added to both animal and plant lists, to indicate (for informational purposes) the general known distribution of the species or subspecies as reported in the scientific literature. This column replaces the "Known Distribution" column on the current U.S. List (and does not imply any limitation on applications of the Act's prohibitions). A new column entitled "Vertebrate Population where Endangered or Threatened" has been added to the U.S. List for wildlife only (as populations of invertebrates and plants may not be listed under the Act). (The lists will be republished in the *Federal Register* later this spring.)

* Sufficient new information—The Department of the Interior Solicitor has determined with respect to withdrawn proposed listings, that "new information" applies to additional information received subsequent to the date of the withdrawal. While the amount and quality of "sufficient new information" would be expected to vary from species to species, this standard should not imply any modification in the biological listing criteria now imposed under Section 4, in the opinion of the Solicitor. While the "sufficiency" of new information would be directly related to the factors which contributed to failure to complete the original listing proposal within the 2-year deadline, either (1) an analysis of data verifying a species' precarious biological status (or newly collected data) or (2) economic analysis and related data as required under 1978 amendments would essentially meet the "sufficient new information" standard.

SEA TURTLE STAMPS ISSUED

The General Post Office of the Republic of Maldives, a group of coral islands in the Indian Ocean, has issued a series of stamps depicting seven species of sea turtles found in their waters. Of the seven species, six are on the U.S. List of Endangered and Threatened Wildlife and Plants. They are: leatherback sea turtle (*Dermochelys coriacea*), hawksbill sea turtle (*Eretmochelys imbricata*), loggerhead sea turtle (*Caretta caretta*), Olive Ridley sea turtle (*Lepidochelys olivacea*), Kemp's Ridley sea turtle (*Lepidochelys kempii*), and green sea turtle (*Chelonia mydas*). The flatback sea turtle (*Chelonia depressa*), which is not on the U.S. List, but is protected under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), also appears on a stamp.

Designed by Maxim Shamir and printed by the House of Questa, England, the stamps cost 10/93 rupees per set and 4/00 rupees for a souvenir sheet. A first-day cover envelope was issued along with this set and is available for 1.00 rupees. (Exchange rate: \$1.00=3.93 Rs.)

Orders for stamps and first-day covers should be sent with full payment by bank draft or International Money Order to Postmaster, General Post Office, Malé, Republic of Maldives.

BERTRAND TO HEAD MASSACHUSETTS AUDUBON

Dr. Gerard A. Bertrand, Chief of the Service's International Affairs division, will leave his post in mid-April to serve as President and Chief Executive Officer of the Massachusetts Audubon Society.

Bertrand, 36, served as science advisor to the President's Council on Environmental Quality before coming to the Service in 1977. Under his leadership, the U.S. role in international wildlife conservation has been greatly expanded, with major accomplishments in the implementation of protective wildlife treaties (notably the Western Hemisphere Convention) and in the conservation of migratory birds. Bertrand and his staff have initiated wildlife conservation programs with more than a dozen countries, including significant endangered species projects in India, Egypt, and Pakistan under the Service's excess foreign currency program.

Selected from over 150 candidates, Bertrand looks forward to guiding Mass. Audubon's wildlife and natural areas preservation programs and to active involvement in the Society's environmental education effort.

Rulemaking Actions

February 1980

BELL'S VIREO UNDER REVIEW

The Service has published a notice of review requesting information which may lead to a proposed listing of two subspecies of Bell's vireo (*Vireo bellii*) as Endangered or Threatened species (F.R. 2/6/80).

A petition to consider listing *Vireo bellii pusillus* and *Vireo bellii arizonae* in California, Nevada, Utah, Arizona, and northwestern Mexico—submitted by Mr. J. M. Greaves of Goleta, California, has attributed the decline of both subspecies to loss of habitat and reproductive losses from parasitism by the brown-headed cowbird (*Molothrus ater*). This vireo nests in the early successional stages (primarily willows) of riparian woodlands which are rapidly being lost. The cowbird population has increased in the American Southwest and has apparently only recently invaded the vireo's riparian habitat.

Some, but not all, of the information required by the Service before the Director can determine the appropriateness of a listing proposal are: complete distribution and numbers still extant in southwestern U.S. and northwestern Mexico, specific habitats that may be proposed as critical, economic and other impacts of designating such areas as Critical Habitats, and the documented impacts of cowbird and habitat loss on the vireo. Persons having information on the vireo's past or present distribution or rate of cowbird parasitism are urged to send their information to the Service. This, and any other relevant information, should be sent to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240, on or before October 3, 1980.

DATA REQUESTED FOR FRITILLARY BUTTERFLY

The status of the Uncompahgre fritillary butterfly (*Boloria* sp.) is being reviewed by the Service to determine if it should be added to the U.S. List of Endangered and Threatened Wildlife and Plants (F.R. 2/6/80).

Known only from a restricted area on Mount Uncompahgre, Hinsdale County, Colorado, this butterfly may be Endangered or Threatened because of overcollecting and the inadequacy of existing regulatory mechanisms. Since rare species of the fritillary butterfly genus *Boloria* are valued highly by collectors, a high demand for this species is expected to occur when it is described scientifically. Excessive collecting activity may also damage the butterfly's fragile high altitude habitat.

The Service is seeking the views of the Governor of Colorado and soliciting from him information on the butterfly's status. Other interested parties are requested to submit any factual information (especially publications and written reports germane to the status review) to the Office of Endangered Species, U.S. Fish and Wildlife Service, Washington, D.C. 20240, on or before May 6, 1980.

Reference Note

All Service notices and proposed and final rulemakings are published in the *Federal Register* in full detail. The parenthetical references given in the BULLETIN—e.g., (F.R. 1/17/80)—identify the month, day, and year on which the relevant notice or rulemaking was published in the *Federal Register*.

ENDANGERED SPECIES CONFERENCES PLANNED

A Northeast Endangered Species Conference is scheduled for May 9-11 in Provincetown, Massachusetts. Organized by the Center for Action on Endangered Species, Monitor International, and the Provincetown Center for Coastal Studies, the conference will focus on the status of rare, endangered—and threatened species, preservation efforts, and the role of government agencies and the scientific community in conserving endangered species in the Northeast States from Virginia to Maine. Featured during the 3-day session will be lectures, slide shows, films, exhibits, and a whale watching expedition in Cape Cod Bay. Advance registration fee is \$25 (with an additional \$10 for the whale-watch.) Contact Phoebe Wray, (617) 772-0445, Center for Action on Endangered Species, 175 West Main Street, Ayer, Massachusetts. 01432.

The 1980 American Association of Zoological Parks and Aquariums (AAZ-PA) Great Lakes Regional Conference will be held April 27-29 at the Cincinnati Zoo. The thrust of this conference will be endangered species, with topics such as "Computer Aid for Endangered Species," "Interpretation and Education Programs," and an "Endangered Species Tour" included on the agenda. Registration fees are \$30 for members and their spouses, and \$40 for nonmembers. For further information contact Barry Wakeman at the Cincinnati Zoo, (513) 281-3700.

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	35	251	286	3	21	24
Birds	67	145	212	3		3
Reptiles	11	50	61	10		10
Amphibians	5	9	14	2		2
Fishes	29	11	40	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	49		49	7	2	9
Total	228	469	697	44	23	67

Number of species currently proposed: 35 animals
(no plants)

Number of Critical Habitats listed: 35

Number of Recovery Teams appointed: 66

Number of Recovery Plans approved: 31

Number of Cooperative Agreements signed with States:
34 (fish & wildlife)
3 (plants)

February 29, 1980

NEW PUBLICATIONS

State Reports on Rare, Threatened, and Endangered Plants for *Maryland*, *Delaware*, *Pennsylvania*, *New York*, and *Virginia*, are available from the Service's Boston Regional Office.

The Endangered Species: A Symposium, Great Basin Naturalist Memoirs, No. 3, may be purchased from the Life Science Museum, Brigham Young University, Provo, Utah 84602, for

\$6.00 per copy.

The Oregon Natural Area Preserves Advisory Committee has published *Rare, Threatened and Endangered Vascular Plants in Oregon—An Interim Report*. This publication will be used in the development of a Natural Heritage Plan for the State. Copies are available from the Division of State Lands, 1445 State Street, Salem, Oregon 97310.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

ANTIOCH DUNES ACQUIRED FOR BUTTERFLY AND TWO PLANT SPECIES

The Service has completed the emergency acquisition of more than 55 acres of a unique sand dune system that is home to an Endangered butterfly and two recently listed plants.

Situated along the southern shore of California's San Joaquin River, the Antioch Dunes constitute the only known habitat for the Lange's metalmark butterfly (*Apodemia mormo langei*), the Antioch Dunes evening-primrose (*Oenothera deltoides* ssp. *howellii*), and the Contra Costa wallflower (*Erysimum capitatum* var. *angustatum*). All three species hang precariously on the brink of extinction unless their habitat can be preserved and protected.

Many parties, including the two property owners, cooperated to expedite the acquisition—the first for an Endangered insect or plant—to forestall the development of a marina and halt sand mining imminently slated for the area. Options on the two parcels—41 acres owned by Mr. George Stamm and 14 acres owned by Mrs. Ethyl Sardis—were exercised and \$2,135,000 in Land and Water Conservation Funds were used in the acquisition.

Background

Lying near the confluence of the Sacramento and San Joaquin Rivers just east of the town of Antioch, the Antioch Dunes is a remnant of a unique river sand dune system once covering close to 500 acres. Biologically, the area is considered a relict "island" containing the northernmost range of many plants and animals of desert affinities—their habitat once extending into the Central Valley in pre-historic times. Natural geological proc-

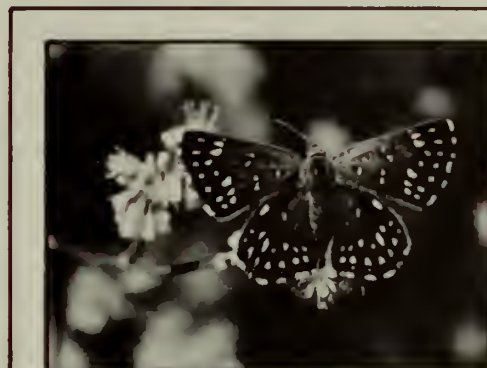


Photo by J. A. Powell

A Lange's metalmark lights upon Antioch buckwheat, its exclusive larval food source.

GOVT. DOCUMENTS
DEPOSITORY ITEM

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esses subsequent to the last glaciation reduced the desert habitat to a few small areas, with the northernmost sand dune community at Antioch.

Discovered entomologically in 1932, the area has since been characterized as having perhaps the highest concentration of distinct endemic insects in

the United States. At least 24 identified species or subspecies have the Antioch Dunes as their type locality. Of these, 10 have never been discovered elsewhere, and another 6 are known only from other vulnerable locations in

Continued on page 6

RECLASSIFICATION PROPOSED FOR THE LEOPARD

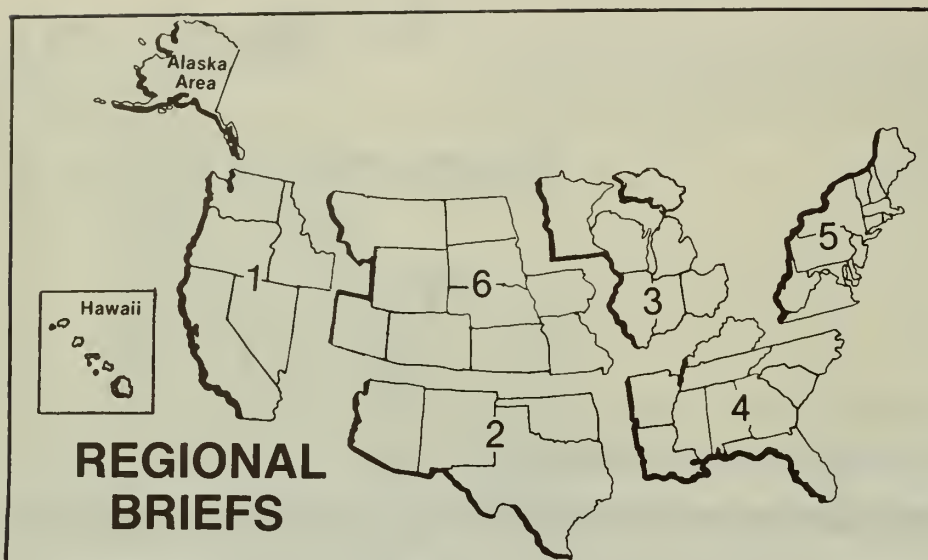
Michael Bender

With commercial exploitation of the leopard (*Panthera pardus*) now under better international control, the Service believes that reclassifying this species from Endangered to Threatened in portions of Africa would more accurately reflect its true status in the wild (F.R. 3/24/80).

Commercial traffic in its fur has always been considered the main threat

to the leopard, and the proposal does not authorize any relaxation in commercial import prohibitions under the Endangered Species Act. Rather, the Service strongly recommends that the leopard be retained on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), where its import and export would be strictly regulated.

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REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of March.

Region 1. The Blunt-Nosed Leopard Lizard Recovery Plan has been sent to Washington for final approval. (For

more information on activities in Region 1, see our stories on Antioch Dunes acquisition and recovery plan.)

Region 2. The region is making preparations to close the Beaumont, Texas, field office of the red wolf (*Canis rufus*) recovery program. Field

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U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Alaska Area:** Alaska.

The ENDANGERED SPECIES TECHNICAL BULLETIN is published monthly by the U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

Region 2, P.O. Box 1306, Albuquerque, NM 87103 (505-766-2321): W. O. Nelson, *Regional Director*; Robert F. Stephens, *Assistant Regional Director*; Jack B. Woody, *Endangered Species Specialist*.

Region 3, Federal Bldg., Fort Snelling, Twin Cities, MN 55111 (612-725-3500); Harvey Nelson, *Regional Director*; Daniel H. Bumgarner, *Assistant Regional Director*; James M. Engel, *Endangered Species Specialist*.

Region 4, Richard B. Russell Federal Bldg., 75 Spring St., S.W., Atlanta, GA 30303 (404-221-3583): Kenneth E. Black, *Regional Director*; Harold W. Benson, *Assistant Regional Director*; Alex B. Montgomery, *Endangered Species Specialist*.

Region 5, Suite 700, One Gateway Center, Newton Corner, MA 02158 (617-965-5100): Howard Larsen, *Regional Director*; Gordon T. Nightingale, *Assistant Regional Director*; Paul Nickerson, *Endangered Species Specialist*.

Region 6, P.O. Box 25486, Denver Federal Center, Denver, CO 80225 (303-234-2209): Don W. Minnich, *Regional Director*; Charles E. Lane, *Assistant Regional Director*; Don Rodgers, *Endangered Species Specialist*.

Alaska Area, 1101 E Tudor Rd., Anchorage, AK 99503 (907-276-3800, ext. 495): Keith M. Schreiner, *Area Director*; Jon Nelson, *Ass't Area Director*; Dan Benfield, *Endangered Species Specialist*.

activities will cease by May 1, and the facility will close by mid-July. Preparations are underway to declare the red wolf extinct in its final range of Louisiana and Texas. (Program emphasis will then be focused on captive propagation and eventual re-establishment in the wild.)

To further assess the status of Endangered fishes, staff members traveled to the Colorado River and Lake Mojave in an attempt to trammel-net bonytail chubs (*Gila elegans*) and razorback suckers (*Xyrauchen texanus*). No bonytails were found; 22 razorbacks were tagged and released.

The Bald eagle (*Haliaeetus leucocephalus*) nesting study on the Verde and Salt Rivers has begun. Dr. Ohmart of Arizona State University is conducting the research, which will extend into February 1981.

The following publications are available from the Albuquerque Regional Office: *The Mexican Wolf* (Endangered Species Report No. 8), and "The Houston Toad," first of a new series entitled "In Jeopardy: America's Endangered Species."

Region 3. Our Service met with the National Park Service, U.S. Forest Service, and Minnesota Department of Natural Resources to discuss mutual concerns including wolf management and prey species which affect the wolf.

Region 4. Tennessee Valley Authority personnel initiated this year's efforts to develop hatchery propagation techniques for the snail darter (*Percina tanasi*). Egg taking and fertilization are being done by hand. Problems with selecting broodfish in peak spawning condition apparently led to poor initial results. Total eggs taken for the month were two larvae and 341 eggs which were still developing and offering prospects for improved results.

Region 5. The Peregrine Falcon Recovery Team has a new leader. Gene McCaffrey, New York Department of Environmental Conservation, replaces Rene Bollengier who served as team leader for the last four years.

Region 6. An Endangered Species Packet has been prepared as the result of a cooperative effort between our Service, the South Dakota Cooperative Extension Service, South Dakota Department of Game, Fish and Parks, and South Dakota State University. The packet contains pamphlets on the bald eagle (*Haliaeetus leucocephalus*), black-footed ferret (*Mustela nigripes*), swift fox (*Vulpes velox hebes*), and whooping crane (*Grus americana*). Also included is a whooping crane poster and two booklets: *Endangered and Threatened Species in South Dakota* and *Endangered and Threatened Fishes of South Dakota*.

The packet is available from the Denver Regional Office.

Alaska Area. The Area Office played host to an inter-agency Section 7 consultation workshop. Forty representatives from both Federal and State agencies attended.

Major changes in the Aleutian Canada goose (*Branta canadensis leucopareia*) recovery effort were recommended by the recovery team at its January meeting, and have been reviewed by the Service and implemented. Based on current biological data, the results from last year's experimental wild-bird transplants, and the previous propagation releases, the future emphasis will be on releases of stock obtained from the wild. The two approaches will be 1) capturing of wild adults and goslings on Buldir Island and transplanting that summer, and 2) pairing of wild adult males captured on California wintering grounds or on Buldir Island with propagated breeding age females until a firm pair bond is established. These pairs will then be released on target sites either as pairs in the spring, or with their broods in the summer.

Exemption Procedures and Application Regulations Issued

William Gill

Final rules governing exemption applications and describing the functions and procedures of review boards and the Endangered Species Committee have been published by the Departments of the Interior and Commerce.

The Endangered Species Act Amendments of 1978 establish a procedure for obtaining exemptions from section 7 of the Endangered Species Act. This procedure was further clarified under the more recent amendments enacted on December 28, 1979. (See the October 1978 and January 1980 BULLETINS.)

Section 7 requires Federal agencies to insure, in consultation with the Secretary of the Interior or Commerce, that their actions are not likely to jeopardize the continued existence of Endangered or Threatened species or destroy or adversely modify their Critical Habitats. Applications for exemp-

tions from this requirement may be made by a Federal agency, by the Governor of a State in which a proposed action would occur, or by a person whose permit or license application has been denied primarily because of section 7 considerations. An application for an exemption is to be directed in writing to the Secretary, who determines if it is properly presented. It is then evaluated by a specially-appointed review board and, if certain criteria are met, decided upon by the Endangered Species Committee.

Application Procedures

Under the newly published application regulations (F.R. 2/8/80), individuals or agencies qualifying for exemption consideration under Section 7(g) must submit a written application to the appropriate Secretary within 90 days of the termination of the consultation process (or within 90 days of the date the Federal agency takes final action concerning a permit or license application). Qualifying parties also have 90 days from March 10, 1980 (the effective date of the final rules), to apply for an exemption with regard to consultations previously completed.

The Secretary may reject an application for exemption that does not comply with all pertinent requirements within 10 days of receipt. A prehearing conference of the review board may be convened by the Secretary if he has questions concerning the applicant's compliance, and the application can be subsequently rejected if found inadequate. The Secretary of State must be notified and public notices published in the *Federal Register* concerning all applications.

Among the changes imposed under 1979 amendments are (1) specific inclusion of the 90-day filing deadline for license or permit applicants beginning after the date on which the concerned Federal agency takes final action; and (2) clarification of threshold responsibilities of the concerned Federal agencies and/or exemption applicant in review board proceedings under Section 7(g)(5). The final rules outline specifically the required contents of exemption applications for: (1) license or permit applicants whose permit or license was denied by a Federal agency primarily because of Section 7(a)(2); Federal agency applicants; and (3) applications from State Governors.

Additional changes were also incor-

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PROTECT ENDANGERED WILDLIFE

AVOID CONFISCATION OF YOUR FOREIGN PURCHASES, DON'T PURCHASE PRODUCTS MADE FROM ENDANGERED WILDLIFE.

MANY ANIMALS FACE EXTINCTION BECAUSE OF ILLEGAL KILLING FOR PROFIT. YOU CAN HELP STOP ILLEGAL TAKING OF ENDANGERED WILDLIFE BY NOT PURCHASING PRODUCTS MADE FROM THEM. THIS WILL ELIMINATE THE INCENTIVE TO POACH THESE ANIMALS.

OVER
FOR
DETAILS →

PROTECT ENDANGERED WILDLIFE

AVOID PURCHASING WILDLIFE PRODUCTS SUCH AS:

- JEWELRY, COSMETICS (INCLUDING TURTLE OIL) AND CURIOS FASHIONED FROM VARIOUS SPECIES OF SEA TURTLES.
- RUGS, SKINS, CLOTHING, PURSES, LUGGAGE, BELTS AND OTHER PRODUCTS MADE FROM SPOTTED CAT SPECIES AND OTHER RARE ANIMALS.
- IVORY PRODUCTS INCLUDING SCRIMSHAW AND FIGURINES.
- ITEMS DECORATED WITH FEATHERS FROM ENDANGERED OR MIGRATORY BIRDS.

YOUR COOPERATION WILL HELP SUPPORT THE WORLD-WIDE EFFORT TO PROTECT ENDANGERED WILDLIFE.

FOR FURTHER INFORMATION CHECK WITH THE U.S. FISH AND WILDLIFE SERVICE BEFORE YOU TRAVEL. CALL 303-234-3723, DENVER, CO.

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DENVER, COLORADO 80225



U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
REGION 6



GPO 554-299

Frontier and Mexicana Airlines are providing copies of this leaflet, prepared by the Service, to passengers on their Mexican flights. Personnel from the Denver Regional Office report that the leaflets received a good response from the airlines and that Frontier has added them to their flights into Canada.

Exemption Regs

Continued from page 3

porated based on comments on the proposed rules. These include the publishing of notices of exemption applications received in the *Federal Register* and notification to the Council on Environmental Quality through the general *Federal Register* notice only.

Procedural Regulations

Regulations governing the procedures for the handling of applications by the review board and the cabinet-level Endangered Species Committee have been published (F.R. 4/4/80). (Interim rules had been published (F.R. 6/8/79) to guide the handling of pending exemption applications—see the July 1979 BULLETIN.)

The review board conducts a threshold review during which the applicant must bear the burden of proof on its position on each threshold criterion. A negative finding by the board (a determination that an irresolvable conflict does not exist, or that all other exemption requirements have not been met) constitutes final agency action. A positive finding results in referral to the Endangered Species Committee. The exemption process can also terminate if the Secretary of State certifies in writing to the Committee that granting an exemption or carrying out the proposed action would violate a treaty or other international obligation of the U.S.

The review board can conduct prehearing conferences and other meetings, which shall be advertised in the *Federal Register* and open to the public. Within 180 days of receipt of an application, the board must issue a report to the Endangered Species Committee addressing: (1) reasonable and prudent alternatives to the action, the nature and benefits of the agency action, and alternate courses of action consistent with conserving the species or its Critical Habitat; (2) whether or not the action is in the public interest and is of national or regional significance; and (3) appropriate mitigation and enhancement measures to be considered.

The Committee then reviews the report and make a final determination within 90 days of receipt of the board's report and records. If the Committee determines that an exemption should be granted, it will issue an order granting the exemption and specifying required mitigation and enhancement measures. (The Committee's decision will appear in the *Federal Register*.)

One major change resulting from the 1979 Amendments provides that any exemption granted by the Committee shall constitute a permanent exemption regarding all Endangered and Threatened species for purposes of completing the agency action, regardless of whether the species was identified in the biological assessment required under Section 7(c). The exemption will not be permanent, however, if: (1) the Secretary finds, based on the best scientific and commercial data available, that an exemption would result in the extinction of a species that was not the subject of a

section 7 consultation or was not identified in any biological assessment, and (2) the Committee determines within 60 days after the date of the Secretary's finding that the exemption should not be permanent. If the Secretary makes a finding that the exemption would result in the extinction of a species, the Committee must meet with respect to the matter within 30 days after the date of the finding. (During the 60 day period following the Secretary's determination, the holder of the exemption must refrain from any action which would result in extinction of the species.)

PUBLIC INVITED TO MEETING PREPARATORY TO CITES 1981 CONFERENCE

Acting through the Service, U.S. Management and Scientific Authorities for the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) have scheduled a public meeting to discuss the proposed agenda and other items in preparation for the forthcoming third biennial conference of CITES parties, to be held in New Delhi in February 1981.

Scheduled for June 2, from 9:30 a.m. to 12:30 in Room 5160 of the Main Interior Building, the meeting will provide a forum for the receipt of comments from the public on proposed agenda items (to be detailed in the *Federal Register* early in May), and on

any proposed changes in the appendices lists of protected species under CITES (see accompanying notice). Procedures for the selection of U.S. delegates to the New Delhi conference and for observer participation at the meeting of the parties will also be discussed.

(Procedures for public participation in the development of U.S. positions for the 1981 meeting should also be published in the *Federal Register* some time in May.)

Those interested in more specific information and/or wishing to attend the May meeting should contact Mrs. Joan Anthony in the Service's Federal Wildlife Permit Office (703) 235-2418.

DATA SOUGHT ON POTENTIAL AMENDMENTS TO APPENDICES LISTS

The Service is soliciting comments and data with respect to additions or changes to the lists of protected species under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) for possible consideration at the third meeting of CITES parties (scheduled for February 1981 in New Delhi, India).

CITES is a 59-nation treaty regulating the import and export of animals and plants listed under three appendices. Appendix I includes species threatened with extinction that are or may be affected by trade. Appendix II includes species that, although not

necessarily threatened with extinction, may become so unless trade in them is strictly controlled. (Species that must be subject to regulation in order that trade in other currently or potentially threatened species may be brought under effective control are also included under Appendix II.) Appendix III includes species that any party nation identifies as being subject to regulation within its jurisdiction, and for which it needs the cooperation of other parties in controlling trade.

Any party nation may propose amendments to Appendices I and II, which must be submitted to the CITES

INTER-AGENCY COOPERATION ASSISTS LAW ENFORCEMENT

Clare Senecal

Two memoranda of understanding, designed to help control growing wildlife crime and preclude duplication of enforcement efforts, were signed on March 19, 1980, by representatives of five Federal agencies involved in wildlife law enforcement. Signers represented the Departments of the Interior (Fish and Wildlife Service), Agriculture (Animal and Plant Health Inspection Service), Commerce (National Marine Fisheries Service), Treasury (Customs), and Justice (Land and Natural Resources Division).

The memoranda were initiated by an April 1979 White House directive to the Secretary of the Interior and the Council on Environmental Quality, which requested an assessment of Federal wildlife law enforcement efforts and the submission of recommendations outlining a mechanism to ensure more complete interagency cooperation. The need for enforcement efficiency was reemphasized in the President's August 1979 Environmental Message, and a Wildlife Law Enforcement Coordinating Committee was established shortly thereafter. (The Committee is chaired by a representative of the Service with members from the other four enforcement agencies.)

The first of the two memoranda of understanding provides for cooperation, as mutually agreed between the represented Departments, to promote enforcement efforts. The specific pur-

poses of the Committee, as outlined in the agreement, include investigation of illegal trade in protected species to insure that such trade is actively investigated and violators prosecuted; the review of enforcement experience, problems and priorities of each involved agency; the coordination of Federal-trade enforcement policies generally; and, improved efforts in keeping heads of represented Depart-

ments better informed.

It was also agreed that the Committee would establish task forces to coordinate various wildlife investigations. The first such task force, to investigate Texas trade in wildlife, is formed by the second of the two subject memoranda. This group will focus its attention on law enforcement activity relating to illegal importation of wildlife and their parts or products from Mexico into the United States at Texas.

The Service plans to host a press conference in June of this year to report on the Texas task force and on other similar group efforts which are currently under way.



MAN CONVICTED IN BALD EAGLE VIOLATION

The longest sentence imposed for violation of a Federal wildlife law—three years in prison—has

been handed down for a rural Blackduck, Minnesota, man who was convicted on March 4, 1980, of killing and selling a bald eagle. Charges against Emmett Carrigan, made in the U.S. District Court in St. Paul, culminated a year-long investigation by special agents of the U.S. Fish and Wildlife Service and Minnesota State authorities.

Carrigan acknowledged selling a bald eagle which he had killed to Service agents acting undercover, and was convicted on two counts—violations of the Migratory Bird Treaty Act and the Endangered Species Act of 1973, respectively. Carrigan had dealt in the illegal sale of bald eagles on previous occasions.

Secretariat 150 days in advance of the meeting for consideration by the parties. (Subsequent to responses by other parties, amendments are adopted by a two-thirds majority vote.)

Acting through the Service, the U.S. Scientific Authority and U.S. Management Authority for CITES are requesting information that may lead to the development of proposed amendments for consideration at the New Delhi meeting.

Generally, the following types of information are required for proposals:

1. Taxonomy

- (a) Class
- (b) Order
- (c) Family
- (d) Genus, species or subspecies, including author and year

- (e) Common name(s), when applicable
- (f) Code numbers, when applicable

2. Biological data

- (a) Distribution (current and historical)
- (b) Population (estimates and trends)
- (c) Habitat (trends)

3. Trade data

- (a) National utilization
- (b) Legal international trade
- (c) Illegal trade
- (d) Potential trade threats
 - (i) Live specimens
 - (ii) Parts and derivatives

4. Protection status

- (a) National
- (b) International
- (c) Additional protection needs

5. Information on similar species

- 6. Comments from countries of origin
- 7. Additional remarks
- 8. References

Please consult the April 4, 1980, Federal Register for additional guidance on appropriate submissions.

All information and comments should be submitted by June 3, 1980, to the Office of the Scientific Authority, U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240. (Notices will appear in the *Federal Register* prior to official U.S. submissions requesting comments on proposed amendments and negotiating positions of the U.S. as well as amendments proposed by other party nations. All proposals must be communicated to the Secretariat by September 5, 1980.)

Service Acquires Antioch Dunes

Continued from page 1

the Delta region or the northern Central Valley of California.

First described in 1938, Lange's metalmark butterfly occurs only on the Antioch Dunes, where its larvae feed exclusively on Antioch buckwheat (*Eriogonum nudum* var. *auriculatum*). Recent surveys show that only 10 acres on the "Stamm" parcel may contain sufficient buckwheat stands to serve as hosts for the butterfly (with a population of less than 200 butterflies within this acquired area), while another stand of the vegetation extending onto adjacent dunes supports a second colony of about 250 metalmarks. The butterflies continue to survive at Antioch despite extreme drought in 1976-77, increased rototilling as a fire prevention measure, and a fire that destroyed most of one buckwheat colony in 1976.

[The Service will soon be reviewing the status of nine insects native to Antioch to determine whether Federal listing as Endangered or Threatened may be warranted. Species to be reviewed include the Middlekauff's katydid (*Idiostatus middlekauffi*), Antioch weevil (*Dysticheus rotundicollis*), Antioch robber fly (*Cophura hurdi*), Valley mydas fly (*Raphiomydas trochilus*), Antioch vespid wasp (*Leptochilus arenicolus*), Antioch tiphiid wasp (*Myrmosa pacifica*), Antioch sphecid wasp (*Philanthus nasalis*), Antioch andrenid bee (*Perdita scitula antiochensis*), and yellow-banded andrenid bee (*Perdita hirticeps luteocincta*).]

The Contra Costa wallflower and Antioch Dunes evening-primrose are also considered relict desert types which—together with several other plant species—form the basis of the unique sand dune insect community. Both the primrose and wallflower are exclusive hosts to several moths, beetles, and bees on Antioch (although none of them is believed to be limited to this area).

The entire area acquired is within the boundaries of Critical Habitat for the wallflower and primrose (identical for both Endangered plants), designated on August 31, 1978, to protect their range from potentially harmful Federal activities (see the September 1978 BULLETIN). Both plant species were depicted a year ago on U.S. commemorative "endangered flora" postage stamps (see the May 1979 BULLETIN).

The Antioch Dunes evening-primrose is a short-lived biennial with large, white flowers that open at night and then fade to pink. Once relatively common in the Antioch Dunes area, the subspecies is now confined to about 60 acres where it survives most vigorously on redeposited wind-blown sand. (Approximately 800 individuals remain.) Where observed in cultivation, primrose seedlings do not grow where adult plants have previously matured unless fresh sand is deposited—a normal process in dune ecosystems undisturbed by man.

Also a biennial, with yellow-orange flowers, the Contra Costa wallflower

occurred on several hundred acres a few decades ago. Less than 200 individuals now survive on a few acres, where they exist on stabilized dunes of fine sand and clay sparsely covered with herbs and shrubs or pasture grasses. The species has survived human disturbance, and seems to thrive in mildly disturbed sand (primarily from rototilling).

Threats

Because of the confined, interdependent nature of this dune community, the Antioch ecosystem is particularly vulnerable to human interference.



Possibly no more than 800 individuals of the Antioch Dunes evening primrose survive today.

U.S. Fish and Wildlife Service Photo

Sand mining and the encroachment of weedy exotics (the latter encouraged by fire prevention rototilling) have been the primary destroyers of flora that remained after industrialization of major portions of the dunes in the 1950's. Housing development, agriculture, off-road vehicle (ORV) activity,

and clearing for power lines have also caused severe habitat deterioration. Native species faced an additional threat in 1976 when an 84-acre waterfront park was proposed for the dunes. (The State of California withdrew the project in March 1979, because the City of Antioch did not have adequate

matching funds at the time.)

Continued sand mining, rototilling, and discing for fire control have reduced the Antioch buckwheat to numbers barely adequate to support the remaining Lange's metalmark colonies,

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PAHRUMP KILLIFISH RECOVERY PLAN APPROVED

The Service has approved a recovery plan for the Endangered Pahrump killifish (*Empetrichthys latos latos*) which occurs only in transplanted populations in Nevada. It is the only fish native to the Pahrump Valley, and is one of two fish which constitute the genus *Empetrichthys*. The other, the Ash Meadows killifish (*E. merriami*), became extinct in the late 1940's.

Only about 3 inches in maximum length, the Pahrump killifish was historically known only from Manse Springs, where it became extinct in 1975 because of the drying of its habitat. The drying of Manse Springs came as no surprise to those familiar with desert springs, and was even predicted after demands on water in the area had been reviewed. It was that prediction which led to the transplanting of the Pahrump killifish and its continued existence today.

The recovery plan calls for the establishment of three sub-populations of the species, each with a minimum of 500 adults. With this level being maintained for three years, the recovery team anticipates the possibility of reclassifying the species as Threatened.

Because the Pahrump killifish no longer exists in its natural habitat, the plan's first priority is the protection and management of the transplanted populations. This would take the form of removal of competing exotic species (such as fish and turtles) as well as safeguards against their reintroduction.

New sites will have to be determined for establishing killifish populations, as the Shoshone Ponds population is considered only temporary because of its great distance from the species' native habitat. The site given highest priority for reintroduction is the Pahrump's ancestral home, Manse Springs. To prepare for such a reintroduction, the team suggests that a management plan be drawn to include, among other things, removal of exotic species, vegetation and water control, and biological enhancement.

Studies on habitat and the fish itself will have to be conducted prior to de-

velopment of any management plans. Habitat studies will include (1) determination of habitat productivity, (2) habitat diversity, (3) water chemistry investigation, (4) determination of yearly temperature regime, and (5) determining the volume configuration of the habitat.

Biological investigations of the killifish should include a study of (1) competition with fish, frogs, birds, etc., (2) food and feeding habits, (3) spawning ecology, (4) water temperature preferences, and (5) substrate requirements.

Other activities recommended in the recovery plan include water management at Corn Creek Springs (the other

existing transplant site) because of its limited volume. Attention should be given to any controllable factor which may reduce water volume (such as the removal of undesirable aquatic vegetation necessary to prevent excessive evapotranspiration).

Both populations should be censused twice yearly, in March at the beginning of the main spawning season and in late September at the end of the main growing season.

Finally, the recovery plan calls for a public information effort using publications, slide shows, and signs at habitat locations, to achieve support for the restoration of the Pahrump killifish.



Photo by Doug Selby

A Service-approved recovery plan recommends the reestablishment of the Pahrump killifish.

SERVICE NAMES TWO RECOVERY TEAMS

Two recovery teams, one for the Tennessee purple coneflower (*Echinacea tennesseensis*) and one for Upper Mississippi River bivalves, were appointed by the Service in March.

Serving on the Tennessee Purple Coneflower Recovery Team are Dr. Paul Somers, Leader, Tennessee

Heritage Program; Dr. Elsie Quarterman, plant ecologist; Dr. Thomas Hemmerly, Department of Biology, Middle Tennessee State University; and Dr. Robert Farmer, plant physiologist, Tennessee Valley Authority.

The Upper Mississippi River Bivalves Recovery Team includes Dr. Edward M. Stern, Leader, University of Wisconsin; Emanuel Worth, commercial clammer; Bill Bertrand, Illinois Department of Conservation; Michael J. Vanderford, U.S. Fish and Wildlife Service; Robert Whiting, U.S. Army Corps of Engineers; and Howard Krosch, Minnesota Department of Natural Resources.

Service Acquires Antioch Dunes

Continued from page 7

and the continuing invasion of weedy plants has reduced available space for potential re-establishment of the host buckwheat.

While freshly deposited sand is necessary for the survival of the Antioch Dunes evening primrose, the area has been so severely disrupted that fresh, pure sand may not be available in large enough quantities to support adequate populations. Disturbed areas colonized by weeds are no longer suitable for the establishment of primrose seedlings.

Weedy exotics, direct habitat destruction, and ORV activities are also primary factors in the decline of the wallflower. Pollinators for both the primrose and wallflower may also be in short supply with the continued loss of plant life needed to support them.

Protecting the Other Dunes

Although much of the fragile Antioch ecosystem has been preserved through acquisition, adjacent areas important

to the survival of all three listed species are also in need of protection.

Significant numbers of both protected plants and the butterfly occur on about 13 acres of largely unimproved land owned by Pacific Gas and Electric (PG&E), which has right of way for transmission lines through the area, and on another 10 acres now owned by Domtar Gypsum. The Service is hoping to negotiate cooperative management or easement agreements with these parties to promote conservation efforts on the contiguous dune areas. (In the meantime, a concerned salvage operator has been attempting to protect the PG&E property from detrimental activities.)

ORV's—A Continuing Threat?

Management plans for the acquired area—to be administered as part of the Service's San Francisco Bay National Wildlife Refuge complex—will soon be formulated. But, in the three weeks since the Service acquisition, considerable controversy has risen over the matter of public use of Antioch Dunes.

Conservationist organizations and a number of other interested parties are concerned that continuing ORV activities could devastate the remaining dune community. While measures have

been taken to close access roads to the newly acquired area, conservationists like Alice Howard of the California Native Plant Society (CNPS) are urging refuge officials to fence off the dunes. "The plants and animals here cannot take much more stress and still be expected to recover," says Howard, who believes blame will inevitably fall with the Service for failing to move swiftly in protecting the dunes from vehicular vandalism. Her view is shared by a number of botanists as well as concerned entomologists like Dick Arnold, who sees a permanent barrier as the only way to insure the otherwise precarious existence of the Lange's metalmark butterfly. "Unfortunately," Arnold says "public ownership has given many people the idea that they have an automatic right to run around the area with their ORVs. I'm afraid make-shift barricades will only temporarily halt this disastrous activity."

But Larry Warden, assistant refuge manager based at Fremont, feels that most of the immediate problems have been resolved. "We've blocked the access with pilings and cables, and have a patrolman out at all times. We will soon have the most sensitive areas posted as closed to the public." Warden says a number of warnings and tickets have been issued, and



Sand mining has reduced this once massive dune to a fraction of its original size. (Looking west, Domtar Gypsum and the west powerline right-of-way are situated not far from the "Sardis" parcel.)

Photo by Tom Stirkal

that these interim measures have already begun to reduce vandalism.

Another refuge spokesperson expressed concern over putting money into fencing that could, and likely will, be removed by people who insist on driving on the dunes. "We're contacting ORV clubs and the media in nearby areas, and are planning a volunteer interpretive program to help educate the public. Our constrained budget necessitates this more practical approach to protecting the area, at least until we can agree on a proper management plan." Warden says only \$10,000 has been budgeted for manpower and materials to manage this area through the remainder of this fiscal year—hardly enough for the purchase of an adequate chain-link fence.

CNPS takes issue with this approach, however. "We cannot afford a lengthy period of 'sweet-talking' in the hope of educating those who apparently prefer the thrill of maneuvering vehicles through sand. There is not enough left for any portion of this ecosystem to be expendable."

Still another view is held by Antioch's City Council, which is concerned that the Service actually acquired more area than is needed to protect the dune community. According to the Antioch mayor, "this additional acreage . . . could more properly be used for industrial development." The City Council has requested that any area "not actually required for reserve purposes be set aside for industrial development and made available to private industry."



Photo by Paul Opler

Endangered: the Contra Costa wallflower.

PLAN FOR ANTIOCH DUNES RECOVERY

A multi-species plan to bolster the recovery of the Lange's metalmark butterfly, Antioch Dunes evening-primrose, and Contra Costa wallflower—all components of the fragile Antioch sand dune community—has been approved by the Service.

The prime objective of the recovery plan is to protect the Antioch Dunes ecosystem to allow the restoration and delisting of these three species by 1990. The major strategy outlined in the plan is protection of this severely threatened habitat—partially accomplished through the Service's recent acquisition of 55 acres of the Antioch Dunes (see accompanying feature).

The recovery plan recommends that studies be conducted to determine biological requirements of Lange's metalmark butterfly, Antioch Dunes evening-primrose, Contra Costa wall-

flower, and Antioch buckwheat (on which the butterfly's larvae feed). According to the plan, information is needed on the effects of weedy exotics and possible methods to eradicate them.

Addressing the current critical endangerment of these species, the recovery team calls for development and implementation of preliminary as well as long-term management and strategy plans. Preliminary plans, as outlined by the team, would deal with fire and weed management techniques which have been detrimental to the species, control of competing exotic plants, and public access affecting the species. An immediate management task should be the protection of existing dunes and the possible reconstruction of dunes to provide needed habitat, according to the team.

To determine the success of preliminary and long-term recovery activities, the populations of Lange's metalmark butterfly, Antioch Dunes evening-primrose, Contra Costa wallflower, and Antioch buckwheat should be monitored to determine actual numbers and reproductive success. Also, the plan suggests the monitoring of the status of dune habitat in and around the general area to determine the effectiveness of management activities.

As with all recovery plans, this one makes recommendations for a public information campaign to improve awareness of and support for plan implementation. This seems to be especially critical with the Antioch Dunes Recovery Plan because of an existing controversy over public use of the dunes. One recommended aid already under consideration is a sign posted in the area which would include a brief history of the Antioch Dunes ecosystem and list regulations governing the use of the area by the public.

Rulemaking Actions

March 1980

CRITICAL HABITAT PROPOSED FOR THREE BUTTERFLIES

The Service proposes to designate Critical Habitat for two butterflies native to California and one Oregon butterfly previously proposed for Federal listing.

Critical Habitat had been proposed for both the Callippe silverspot butterfly (*Speyeria callippe callippe*) and Oregon silverspot butterfly (*S. zerene hippolyta*) along with proposals to list these insects respectively as Endangered and Threatened (F.R. 7/3/78—see the August 1978 BULLETIN). But, in accord with substantial requirements brought with 1978 Amendments to the Endangered Species Act, the Critical Habitat portions of these proposals were subsequently withdrawn (F.R. 3/6/79—see the April 1979 BULLETIN).

The Palos Verdes blue butterfly (*Glaucopsyche lygdamus palosverdesensis*) was also proposed for listing as Endangered on July 3, 1978, and its Critical Habitat is now proposed for the first time.

Callippe Silverspot

Formerly known from San Francisco and San Mateo Counties, the only true remaining populations of the Callippe silverspot butterfly now occur in the eastern portions of the San Bruno Mountains. (The San Francisco population has been extirpated due to urban development.)

Major threats to surviving populations include projected housing development and increasing recreational activities (a county park is slated for the area) that would directly eliminate portions of the butterfly's essential habitat. Increased trampling, collecting, and disturbance from off-road vehicles would also threaten the existence of the insect.

Changes in fire management (periodic fires may be necessary to maintain the grassland community on which the butterfly depends) would also result from increased human residence and recreational use.

While the previously proposed Oakland Zone has been deleted from this new proposal (as populations of silverspot butterfly in that area are no longer



The Callippe silverspot is one of three butterflies for which Critical Habitat has been proposed.

believed to represent Callippe silverspots), additional grasslands on the extreme eastern portions of the main ridge of San Bruno Mountain have been added based on additional information on the species' habitat needs.

Oregon Silverspot

The Oregon silverspot formerly occurred in salt spray meadows from Washington to Oregon. The status of the Washington colony is now uncertain, while most Oregon populations have been extirpated by real estate development. (One of the areas previously proposed as Critical Habitat has since been developed for housing.)

Direct loss of habitat by land clearing, trampling from increased recreational use, and the introduction of weedy exotics that could change the nature of the plant community on which the butterfly depends are all factors that could threaten the survival of the Oregon silverspot.

The salt spray meadow between Big Creek and Rock Creek in Lane County—an area large enough to support the host plant violet essential to the butterfly's survival—has been proposed as Critical Habitat.

Palos Verdes Blue

This butterfly was once known from four restricted localities on the Palos

Verdes peninsula. The Palos Verdes blue butterfly has been extirpated from one area due to housing development, and two other localities have been adversely affected by weed control practices that threatened the butterfly's host plant. The rototilling of weeds for fire prevention and other similar land management practices in addition to housing development and increased recreational use (especially at one locality that has been designated a city park) would threaten the continued existence of the Palos Verdes blue butterfly.

Three areas within Los Angeles County containing the coastal chaparral colonies of *Astragalus trichopodus leucopsis* (the butterfly's only host plant) have been proposed for designation as Critical Habitat.

Public Meetings/Hearings

Public meetings on all three proposals were scheduled in mid-April, and public hearings are to be held as follows:

- *Callippe silverspot*: May 1, 7:30 p.m., Plaza Airport Inn, Millbrae, California.
- *Oregon silverspot*: April 29, 7:30 p.m., Plaza Airport Inn, Millbrae, Newport, Oregon.
- *Palos Verdes blue*: May 2, 7:30 p.m., Public Personnel Building, Rancho Palos Verdes, California.

Comments/Data Solicited

The Service has drafted impact analyses on all three proposals, and believes at this time that economic and other impacts of these proposed actions are insignificant (under provisions of the 1978 Amendments and other applicable Federal laws). Upon completion, final impact analyses will serve as the bases for determinations as to whether exclusion of any areas from Critical Habitat designation is warranted (for economic impact or other reasons).

Comments, as well as biological and economic data, in response to these proposals should be submitted by May 27, 1980 (for the Palos Verdes blue and Oregon silverspot), and May 28, 1980 (for the Callippe silverspot), to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

CRITICAL HABITAT PROPOSED FOR FOUR SAN MARCOS RIVER SPECIES

Critical Habitat has been proposed by the Service for two species of fish, a salamander, and a plant dependent upon maintenance of portions of the San Marcos River in Texas (F.R. 3/19/80).

The proposed determinations for the San Marcos gambusia (*Gambusia georgei*) and the San Marcos salamander (*Eurycea nana*) are repropoals of Critical Habitat designations proposed on July 14, 1978 (see August 1978 BULLETIN), but later withdrawn in accord with 1978 Amendments to the Endangered Species Act (see April 1979 BULLETIN). Critical Habitat for the fountain darter (*Etheostoma fonticola*) and the Texas wild rice (*Zizania texana*) are proposed for the first time.

San Marcos Salamander

Proposed for listing as a Threatened species (with special regulations allowing controlled taking under State law) on July 14, 1978, this amphibian is threatened by the potential lowering of water tables affecting Spring Lake. Should Spring Lake become either dry or intermittent, algal mats essential to the salamander's food source and shelter could be exposed, leading to destruction of its only habitat. (Skin divers could also disrupt algal mats and the bottom of the lake, exposing the amphibians to increased predation.)

The Critical Habitat proposal includes Spring Lake and approximately 50 meters downstream of the San Marcos River, the entire known range of the species.

San Marcos Gambusia

Also proposed as Endangered on July 14, 1978, the San Marcos gambusia is presently known only from a short segment of the San Marcos River. Only 19 individuals were found during a 1979 survey—an indication of the species' sensitivity and habitat specificity. The fish prefers open areas away from stream banks with a minimum of aquatic vegetation over a mud bottom with little current. Any actions that would increase vegetation, disrupt the mud bottom, or alter the temperature

regime could easily eliminate the species.

A small, 1.5 km section of the San Marcos River below Spring Lake has been proposed as Critical Habitat.

Fountain Darter

Listed as Endangered on October 13, 1970, the fountain darter was originally known from the San Marcos and Comal Rivers in Texas. The Comal River population was extirpated in the mid-1950's due to reduced flows. The species presently occurs in Spring Lake and in portions of the San Marcos River, although the fish has been eliminated from a lower portion of the river (apparently due to a small impoundment).

Adult and young fountain darters prefer areas with rooted aquatic vegetation, which grows close to the substrate, with filamentous algae present. Activities which would reduce or eliminate darter populations include impoundments, excessive withdrawal of water, pollution, and any other actions that would destroy or reduce aquatic vegetation in Spring Lake or the San Marcos River.

Its entire known range (Spring Lake and its outflow and the San Marcos River downstream to about just below the Interstate Hwy. 35 bridge) has been proposed as Critical Habitat.

Texas Wild Rice

Listed as Endangered on April 28, 1978 (see the May 1979 BULLETIN), the Texas wild rice was once known from Spring Lake and its outflow and the San Marcos River. Populations have been significantly reduced to a small area along a 1.5 mile stretch of the river.

The species is threatened because of its extreme vulnerability due to its limited range, its apparent inability to reproduce sexually in its native habitat, and the possibility of hybridization. Any action which would significantly alter the flow of water quality of the San Marcos River could adversely modify its essential habitat, as the species is adapted to conditions of clear

water, uniform annual flows, and constant temperatures. Dredging, bulldozing, bottom plowing or disturbances from harrowing, cutting, or intensive collecting—the latter identified as factors in the decline of the species—would threaten its survival.

The species' current and former range and a small amount of habitat downstream from existing colonies for possible population expansion (to the river's confluence with the Blanco River) have been proposed as Critical Habitat.

Public Hearing Scheduled

The Service announces that a public hearing on the proposal will be held at the Student Union Bldg., Southwest Texas State University, in San Marcos, Texas, on May 12 at 7:00 p.m. The hearing is being held subsequent to a public meeting scheduled for April 8 in San Marcos.

Comments/Data Solicited

The Service has drafted an impact analysis, and believes at this time that economic and other impacts of this proposed action are insignificant (under provisions of the 1978 Amendments and other applicable Federal laws). Upon completion, a final impact analysis will serve as the basis for a determination as to whether exclusion of any area from Critical Habitat designation is warranted (for economic impact or other reasons).

Comments, as well as biological and economic data, in response to this proposal should be submitted by May 19, 1980, to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

Reference Note

All Service notices and proposed and final rulemakings are published in the *Federal Register* in full detail. The parenthetical references given in the BULLETIN—e.g., (F.R. 1/17/80)—identify the month, day, and year on which the relevant notice or rulemaking was published in the *Federal Register*.

ENDANGERED STATUS AND CRITICAL HABITAT PROPOSED FOR ROBBINS' CINQUEFOIL

The Service has published a proposal to list a rare northeastern plant, the Robbins' cinquefoil (*Potentilla robbinsiana*), as Endangered and to designate the species' limited habitat for Federal protection (F.R. 3/24/80).

Robbins' cinquefoil was cited by the Smithsonian Institution in its July 1, 1975, report to Congress as in need of protection, and was included in a subsequent Service proposal (F.R. 6/16/76) to determine approximately 1,700 vascular plants as Endangered. In line with 1978 Amendments to the Endangered Species Act, requiring that all proposals more than two years old (following a one-year grace period) be withdrawn, the Service published notice on December 10, 1979, withdrawing its June 1976 proposal. At this time, the Service has sufficient new information to repropose this species for listing, and its Critical Habitat is hereby proposed for the first time.

Status and Declining Factors

This small perennial occurs in alpine areas of New Hampshire and Vermont, where its preferred habitat is nearly barren fell-fields above 4,000 feet.

Historically, the Robbins' cinquefoil is known from two separate localities in the White Mountains of New Hampshire and from one recently discovered locale in Vermont. The plant presently occurs in greatly reduced numbers in only one New Hampshire site (on U.S. Forest Service lands) and on private property in Vermont. Two populations known from the Franconia Ridge of the White Mountains have apparently been destroyed due to hiker impacts.

Trampling as the result of increasing hiker traffic along the Appalachian Trail (bisecting both New Hampshire sites) continues to be the primary threat to remaining populations in the Presidential Range of the White Mountains. The fell-field habitat occupied by the cinquefoil offers no obstacle to hikers wandering off the trail, or to illegal campers and other groups that can easily crush plants or dislodge the stony surface essential to the maintenance of the plant's habitat. Once disturbed these fragile alpine areas and plant communities take many years to recover.



Photo by Garrett E. Crow

A member of the rose family, the Robbins' cinquefoil forms tufted rosettes bearing yellow flowers. The perennial and its reduced habitat are threatened by trampling and other factors.

Only a fraction of the original population of Robbins' cinquefoil remains at the second New Hampshire site, and all plants within 2 meters of the Appalachian Trail have been eliminated. (Further destruction may also occur from projected widening of the hiker travel zone in this area.)

Trampling is also considered a threat to the population in Vermont, which has received little protection planning.

Other factors contributing to the decline of the species include overcollecting and the plant's extreme vulnerability to harsh climates and drought due to its declining numbers.

Critical Habitat designation has been proposed for the area in the White Mountains where the species now occurs (exclusive of the summit of Mt. Washington), although additional habitat suitable for reintroduction, management, and natural expansion may be proposed in the future.

Comments/Data Solicited

The Service has drafted an impact analysis, and believes at this time that economic and other impacts of this proposed action are insignificant (under provisions of the 1978 Amendments and other applicable Federal laws). Upon completion, a final impact analysis will serve as the basis for a determination as to whether exclusion

of any area from Critical Habitat designation is warranted (for economic impact or other reasons).

Comments, as well as biological and economic data, in response to this proposal should be submitted by May 23, 1980, to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

The Service will hold a public meeting on the proposal on April 28, at 7:30 p.m., at the YMCA in Concord, New Hampshire.

KENTUCKY CAVE SHRIMP NOTICE

The Service has issued an advance notice of its intent to repropose the Kentucky cave shrimp (*Palaemonias ganteri*) for listing as either an Endangered or Threatened species (F.R. 3/28/80). The cave shrimp was previously proposed for listing as a Threatened species (F.R. 1/12/77), but the proposal was withdrawn to comply with the 1978 Endangered Species Act Amendments (F.R. 12/10/79).

A petition to list the species reports its first discovery since 1967 (in the Flint Mammoth Cave System, Edmon-ton County, Kentucky) and describes threats to its existence. The Service

has determined that this petition presents sufficient new data to warrant a reproposal.

Interested persons having knowledge of the Kentucky cave shrimp or its habitat requirements, or information regarding current and potential threats to its continued existence, are invited to submit factual information to the Office of Endangered Species, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

FIVE FOREIGN REPTILES LISTED AS ENDANGERED

Three lizards and two snakes threatened with extinction on the foreign islands where they occur have been designated by the Service as Endangered species (F.R. 3/20/80).

All five species—the San Esteban Island chuckwalla (*Sauromalus varius*), Fiji Island banded iguana (*Brachylophus fasciatus*), Fiji crested iguana (*Brachylophus* sp.), and two Round Island boas (*Bolyeria multicarinata* and *Casarea dussumieri*) had been proposed for listing on November 2, 1979 (see the December 1979 BULLETIN).

Chuckwalla

The population of the San Esteban Island chuckwalla, a large lizard found only on the island of its name in the Gulf of California, is estimated to number fewer than 4,500. Many specimens have been removed for the exotic pet trade, particularly since the lizard's main habitat is a single arroyo easily accessible by road. The species is not now protected by international trade agreements, although a collecting permit is required by Mexico. It is anticipated that listing the chuckwalla will provide additional protection under the provisions of the Endangered Species Act by imposing added restrictions on importation to the U.S.

Iguanas

The Fiji Island banded iguana and Fiji crested iguana are found only in the Pacific, the former on several islands in Fiji and Tonga, and the latter—a recently discovered species—only on a small, remote island in the

Fiji group. Both species are threatened by elimination of habitat through tree removal by humans and vegetation destruction by feral goats. In addition, the banded iguana faces the threat of commercial exploitation for the exotic pet trade. Other problems facing these colorful lizards are predation by feral cats and killing by native Fijians.

Boas

The Round Island boas are the sole surviving members of the subfamily *Bolyerinae*, a group of primitive boas. There have been only six sightings of one species since 1975, and the other species is estimated to number no more than 75. These snakes are mainly threatened by deterioration of their palm forest habitat due to destruction of vegetation (causing erosion) by the rabbits and goats brought to Round Island in 1840.

Although the four Fiji and Round Island species are protected in their native countries, their low populations, remote habitats, and narrow ranges could undermine their precarious hold on existence. Listing of the reptiles will emphasize the importance of protection to residents of the Fiji group, Tonga, Mexico, and Mauritius, and may make U.S. funds and wildlife expertise available to aid the conservation programs of these countries.

SHOSHONE SCULPIN UNDER REVIEW

A native Idaho fish, the Shoshone sculpin (*Cottus greenei*), is the subject of a status review being conducted by the Service.

The species is endemic to the Hagerman Valley in southern Idaho and is restricted to short tributaries of the Snake River in the "Thousand Springs" formation, a spring system existing between Twin Falls and Bliss on the north bank of the Snake River Canyon. It is likely that the Shoshone sculpin had populations in the free-flowing Snake River prior to construction of Dams, the river having served as a dispersal corridor for the species. Lower Salmon Falls Dam and Upper Salmon Falls Dam impounded most of the Snake River within the species' distribution,

and Bliss Dam impounded water from a site below Bliss up to the down-river end of the Thousand Springs tributaries. Proposed water projects may adversely affect many of the springs now inhabited by the sculpin.

The Service is seeking comments from the Governor of Idaho, and invites other interested parties to submit any factual information and comments to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240, by May 27, 1980.

SERVICE REVIEWS BONNEVILLE CUTTHROAT TROUT

In response to letters and information from the Desert Fishes Council and the Bonneville Chapter of the American Fisheries Society, the Service is undertaking a status review of the Bonneville cutthroat trout (*Salmo clarki utah*) to determine if a proposal to list the species as Endangered or Threatened is warranted.

The species is known to occur in Lincoln County, Wyoming, White Pine County, Nevada, and Beaver, Jaub, Salt Lake, Sevier, and Washington Counties in Utah. Factors affecting the status of the Bonneville cutthroat include hybridization with non-native trouts and habitat destruction due to agricultural practices, activities associated with mining, and livestock grazing (which destroys and degrades riparian vegetation and streambank soil stability resulting in siltation, stream channel alteration, and loss of cover).

The Service is seeking comments from the Governors of Nevada, Wyoming, and Utah. Other interested parties are requested to submit comments and factual information to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240, by May 27, 1980.

Seizure and Forfeiture Procedures Revised

Revised seizure and forfeiture procedures, to be used by the Service in enforcing the Endangered Species Act and several other wildlife laws, were recently issued in a final rulemaking (F.R. 4/19/80). These regulations clarify prior procedures, which will be continued, and implement the forfeiture provisions of the "customs laws."

The adopted customs laws (certain provisions of the Tariff Act of 1930) allow property having an appraised domestic value not in excess of \$10,000 to be forfeited through administrative proceedings conducted by the Department of the Interior. The regulations also provide procedures for filing petitions both to remit forfeiture and to restore the proceeds of forfeited property disposed of according to the law. More efficient transactions involving seizure/forfeiture and petitioning procedures should be effected since, in many instances, these regulations now allow these processes to be handled within the Department.

==Rulemaking Actions==

COLUMBIA TIGER BEETLE STATUS REVIEW

The Service is reviewing the status of the Columbia tiger beetle (*Cicindela columbica*) to determine whether it should be proposed for listing as an Endangered or Threatened species (F.R. 3/3/80).

Formerly occurring on sandbars in the Columbia and Snake Rivers in Washington, Oregon, and Idaho, the beetle has been extirpated from these rivers because of water impoundments. Dam construction on the lower Salmon River in Idaho could destroy the only known remaining populations of the species.

The Service is seeking the views of the Governors of Oregon, Idaho, and

PUBLIC MEETINGS/HEARINGS

Due to the often unavoidable short notice in scheduling public meetings and hearings (in compliance with 1978 Amendments to the Endangered Species Act) for certain listing and Critical Habitat proposals, we regret that we cannot always relay adequate notice to our readers. In future issues, however, we will attempt to provide available information through this column. Due to space limitations and uncertainty of *Federal Register* publication dates, summaries of pertinent proposed rulemakings may not necessarily accompany meeting notices, but may be included in a subsequent issue of the *Bulletin*.

Species/Action	Affected State(s)	Locations of Meetings/Hearings	Date	Time
<i>Robbins' cinquefoil</i> : proposed E and C.H.	NH	Meeting: YMCA, Concord	4/28/80	7:30 p.m.
Oregon silverspot butterfly: proposed C.H.	OR	Hearing: State Marine Science Center, Newport	4/29/80	7:30 p.m.
Callippe silverspot butterfly: proposed C.H.	CA	Hearing: Plaza Airport Inn, Millbrae	5/1/80	7:30 p.m.
Palos Verdes blue butterfly: proposed C.H.	CA	Hearing: Public Personnel Bldg., Rancho Palos Verdes	5/2/80	7:30 p.m.
Four San Marcos River species (2 fishes, 1 salamander, 1 plant): proposed C.H.	TX	Hearing: Student Union Bldg., Southwest Texas State University, San Marcos	5/12/80	7:00 p.m.
Four Rio Yaqui River Fishes: proposed C.H.	AZ	*Meeting: Cochise College, Douglas	6/3/80	1:30 p.m.
Delta green & California elderberry longhorn beetles: proposed C.H.	CA	Meeting: Tennis Club, 4120 Chiles Road, Davis	5/22/80	7:30 p.m.
		Hearing: (as above)	6/12/80	7:30 p.m.
Mojave rabbitbush longhorn beetle: proposed C.H.	CA	Meeting: Essex House, 44916 N. 10th St. W., Lancaster	5/23/80	7:30 p.m.
		Hearing: (as above)	6/13/80	7:30 p.m.

* Tentative
E—Endangered
T—Threatened
C.H.—Critical Habitat

Washington, and is soliciting from them information on the status of the Columbia tiger beetle. Other interested parties are invited to submit any factual information, especially publica-

tions and written reports, to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240, on or before June 2, 1980.



Photo courtesy of Lothar Schlawe

The Service has proposed reclassification from Endangered to Threatened status for the leopard, while urging its retention on Appendix I of CITES as a safeguard against commercial trade.

Leopard

Continued from page 1

Background

The leopard is the most widely distributed of any cat species. It occurs throughout most of Africa, and from Asia Minor to China, Korea, Japan, and Java; it is also found in India, Ceylon, and Southeast Asia. Nevertheless, widespread poaching and uncontrolled trade in its fur posed such a threat to the leopard that the Service

listed it as an Endangered species in 1972, under the Endangered Species Conservation Act of 1969. In preceding years, thousands of the prized spotted pelts had been imported annually into the United States alone. The Service felt that, although the leopard occurs throughout a large area, no species of large cat could withstand such an enormous drain on wild populations. It became clear that protection was necessary, but the 1969 Act did not provide for classification as Threatened; therefore, based on the best biological data available at the time, the Endangered category was chosen.

Importation of leopard fur was brought to an abrupt halt, and only a few live specimens have been allowed into the U.S. for propagation or scientific purposes since 1972.

Three major studies on the leopard have been conducted since the 1972 listing, and the results indicate that populations are stable or increasing in most sub-Saharan countries. The Service believes that there is an absolute minimum of 233,050 leopards throughout the entire area, with 1,155,000 being a "realistic" figure. On the basis

Continued on page 16

Leopard

Continued from page 15

of these population estimates, and because there is now an international treaty regulating trade in leopards and their products, it is thought that the Threatened classification under the 1973 Act would more accurately reflect the cat's status.

Proposed Action

Commercial traffic in leopard products, still a potential threat to wild populations, would continue to be banned under the Threatened classification, although permits to import live animals could be granted for scientific, propagational, educational, and zoological exhibition purposes. Restrictions against importation of legally-taken sport hunting trophies, however, would be eased somewhat in accordance with provisions under CITES.

Permits from both the country of origin and the importing country would be required under CITES before a trophy could enter the U.S. Applications would only be accepted on a case-by-case basis, and would not be approved unless scientific findings show that the activity or its purpose will not be detrimental to the survival of the leopard in the wild.

The Service plans to publish a recommendation that the leopard be kept on Appendix I of the Convention. If the leopard is moved to the less restrictive Appendix II, however, the Service may be required to reconsider

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	35	251	286	3	21	24
Birds	67	145	212	3		3
Reptiles	11	55	66	10		10
Amphibians	5	9	14	2		2
Fishes	29	11	40	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	49		49	7	2	9
Total	228	474	702	44	23	67

Number of species currently proposed: 35 animals
(1 plant)

Number of Critical Habitats listed: 35

Number of Recovery Teams appointed: 68

Number of Recovery Plans approved: 32

Number of Cooperative Agreements signed with States:

34 (fish & wildlife)

4 (plants)

March 31, 1980

its status under the Act.

The leopard is killed indiscriminately in some parts of Africa because of predation on livestock, and it is thought that allowing a limited amount of sport hunting would actually benefit this species by creating an incentive for its conservation. As the cat gains some economic value, countries might begin to manage it more carefully as another natural resource.

The proposal, which has been under consideration for several years, would reclassify the leopard as Threatened only in sub-Saharan Africa (with the

exception of Somalia, where the current Endangered classification would be retained). It would remain listed as Endangered throughout all other portions of its range.

Comments Requested

The Service welcomes comments and additional data pertinent to the proposal from all interested parties. They should be submitted by June 24, 1980, to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

GOVT. DOCUMENTS
DEPOSITORY ITEM

Special Report:

APR 29 1980

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FUTURE OF DUSKY MAY DEPEND ON CAPTIVE PROPAGATION



Heavily streaked with black, with a yellow stripe outlining its bill and wing, the brown 5-inch long dusky seaside sparrow may be North America's rarest bird. This male (shown in aggressive posture typical of the March-July mating season) is one of only 13 known to occur in 1979 within the dusky's remaining range. Experts will comb suitable habitat in Florida's Brevard County this spring in the hope of finding nesting activity and females—unobserved since 1976.

While apparently never abundant nor widely distributed, Florida's dusky seaside sparrow (*Ammodramos maritima nigrescens*) is now ranked among the Nation's most critically Endangered species. The subspecies has disappeared from once-suitable habitat on Merritt Island on the east coast of Florida, and last year's surveys of the bird's remaining range near the St. Johns River turned up only 13 singing males. Since 1976, experts have failed to identify a single female.

The 1980 survey will soon be underway. But in the meantime, Florida and Federal officials are now considering captive breeding as possibly the only recourse to the dusky's recovery.

Emergency Strategy

This April, personnel from the Fish and Wildlife Service, Florida Game and Fresh Water Fish Commission, and Florida Audubon Society, will cooperate in an exhaustive survey to learn precisely how many duskies remain. Utilizing helicopters for access and optimum manpower, all potential habitat—some 25,000 acres in the St. Johns River Basin—will be surveyed using tape recorders and other techniques to seek out all surviving duskies, especially in the hope that females and evidence of nesting may be found.

Duskies generally breed from March to August, with two egg-laying peaks in late April to early May and late June

to early July. Should an active nest be found this spring, any young would likely be taken (and hand-reared) at the age of 4–5 days, which should then induce the laying of a second brood, or “double-clutching.” Extra precautions would be employed to protect any nests found, as the eggs and young are especially susceptible to predation.

Jim Baker, wildlife biologist for the Service’s Jacksonville Area Office and team leader for the Service-appointed Dusky Seaside Sparrow Recovery Team, says team members have discussed the possibility of captive propagation for several years. “We kept hoping that we had missed a colony and that surveys would reveal additional birds.” With no reproduction recorded since 1975 and dusky numbers continuing to plummet, the team now sees no alternative to a captive breeding program. Unless by June the results of this year’s survey show promise, drastic action may have to be taken if this sparrow is to survive and recover to the point where it can again become a viable component of its ecosystem.

With this view in mind, the Florida Game and Fresh Water Fish Commission recently requested authorization from our Service to take remaining wild dusky seashores into captivity in an attempt to promote breeding and to “buy time” by increasing the bird’s longevity through safe-keeping. Should the Service approve Florida’s plan, the duskies will be captured in mid-July and placed in the care of specialists at Florida’s Gainesville research laboratory.

According to Dr. Will Post, hired by the State to guide its captive breeding effort, 22 Scott’s seaside sparrows (*Ammodramus maritima peninsulæ*)—including 5 hand-reared last year—are now in captivity at the Gainesville laboratory to test the feasibility of captive breeding this closely related race. Nine pairs are showing signs of breeding, and Post hopes to have eggs by the first of April.

Captive maintenance has already been accomplished with northern seaside sparrows (*A. m. maritima*), and it has been shown that wild seashores can adapt more readily to captivity if a few captive sparrows have been previous aviary occupants and can tutor the wild birds. (Post believes that Scott’s seashores as well as three duskies taken into captivity last year—two males and a bird whose sex is yet to be determined—could help acclimatize newly introduced duskies.)

With two-thirds Federal matching fund assistance from our Service, Florida is now readying propagation facilities to house duskies under the most natural, yet sanitary conditions possi-



A broad, open horizon with little brush is ideal habitat for the dusky seaside. The subspecies prefers cordgrass with ponds and pans scattered throughout a moist savanna.

ble. Stands of native grasses will be planted in the aviaries, with a central feeding area to be flooded periodically to simulate a tidal saltmarsh environment. Separate pens are being constructed to minimize mortality from infectious disease or catastrophe, and every imaginable precaution would be taken to preclude risks to the surviving population of duskies.

To supplement their knowledge about seaside sparrows, Florida is also conducting literature searches and ecological studies of the Scott’s seashores in the hope of better understanding its requirements and limiting characteristics. (About 250 of these sparrows have been banded this year as part of the State’s plan to learn more about the role of predators, wildfires, pesticides, and other mortality factors that might give us better insight into dusky management.)

Life History and Declining Factors

The dusky is one of several subspecies of seaside sparrow native to

Florida—all of which are apparently on the decline due to loss of coastal marsh habitat. The Smyrna seaside sparrow (*A. m. pelonota*), once native to the New Smyrna Beach vicinity, is believed extinct, while the Cape Sable seaside sparrow (*A. m. mirabilis*)—occurring in the Everglades—is federally-listed as Endangered. Another race, the aforementioned Scott’s seaside sparrow, occurs in stable populations on the west coast of Florida.

The dusky’s past known distribution includes portions of Merritt Island (mostly within the Service’s Merritt Island National Wildlife Refuge) and, on the mainland, remnant brackish marshes in the St. Johns River Basin within and south of the St. Johns National Wildlife Refuge. (The dusky’s former range is indicated on the accompanying map.)

• St. Johns

Drainage (primarily for agriculture) has altered the water table in the upper St. Johns Basin, and much of the



U.S. Fish and Wildlife Service Photo

St. Johns Refuge workers use a marsh buggy to set and control fires to maintain the preferred cordgrass habitat.

two individuals.)

Habitat Management Key to Recovery

Whether left to chance in the wild or bolstered through captive propagation, recovery of the dusky seaside sparrow will ultimately depend on the availability of suitable habitat to support it. As recommended by the Dusky Recovery Team, a number of measures are necessary to maintain and develop existing and potential habitat for this uniquely adapted subspecies.

Taking into account the dusky's preference for an "unbroken horizon," the St. Johns Refuge fire management plan calls for prescribed burning in a checkerboard pattern to simulate past conditions. Refuge personnel are also manually removing brush and palm trees (which the dusksies shy away from apparently to avoid predators) within the sparrow's range.

Other components of the habitat management plan on St. Johns NWR include:

- vegetation control using herbicides (2-4-D is apparently successful in controlling the spread of woody vegetation).
- water level monitoring (dusksies prefer a fairly moist habitat, which inhibits the growth of woody vegetation as well as wildfires).
- blackbird control (red-wings have become abundant in the area with the encroachment of *Baccharis* and other

woody plants. Attempts are being made to control red-wings in the approximately 600 acres within the dusky's present range, as the territorial blackbirds harass and compete with dusksies, especially during the breeding season.)

In addition, the Service has purchased selected parcels (amounting to about 2,000 acres) within the "Beeline Tract" in the hope of preserving this valuable habitat, where 6 male dusksies were sighted in last year's survey. Plans call for the fencing of these areas as well as portions of the St. Johns Refuge to preclude disruption by cattle in adjacent pastures. The refuge is now closed to the public because of the dusky's sensitivity to human disturbance.

(The conflict between mosquitos and the dusky's stringent habitat requirements have made conservation extremely difficult on Merritt Island, where high water levels and consequent vegetation changes have unfortunately precluded any success with restoration measures thus far.)

Artificial Insemination/Semen Storage

The feasibility of captive-breeding the Endangered dusky seaside will, of course, largely depend on the results of this year's survey. If a female should be found, then every possible attempt would be made to promote breeding. Should the birds be taken into cap-

tivity, and should they fail to breed in these semi-natural conditions, technology developed at the Service's Patuxent Wildlife Research Center to boost the fertility of whooping cranes and other Endangered populations may give us additional options.

Using Scott's seaside sparrows as surrogates, Dr. George Gee at the Patuxent Center plans to study the physiology and breeding behavior of these birds to perfect techniques for artificial insemination and semen preservation that could be used with the dusky.

We now know that maintenance of genetic diversity is especially critical to declining populations, as it is this pool of material that enables an animal population to adjust to changes in the environment. As Darwin discovered (1859), each species has an inherent amount of variation, modified throughout its evolution by natural selection to permit its survival. Although captive propagation of a small remnant population may insure the survival of a species for many generations, it inevitably leads to a loss of genetic diversity.

Methods for the collection, insemination, and preservation of semen have never been developed for passerine birds. Under his current proposal, Gee will establish a flock of Scott's seaside sparrows in facilities at the Patuxent Center in Maryland where semen collection, artificial insemination, and day-length manipulation methodolo-



U.S. Fish and Wildlife Service Photo

This blackened mass is the aftermath of the 1975 wildfire that destroyed most of the remaining dusky habitat on St. Johns.

dusky's habitat has been converted to pasture and areas better suited for housing and roads. Where the total mainland dusky population was estimated at nearly 900 in 1968 (having been rediscovered only a few years before), possibly no more than a dozen individuals remain today.

Biologists speculate that the birds evolved in a saltmarsh environment subjected to frequent but self-contained lightning fires occurring in the rainy season, when the marsh is wet and the humidity high. Although natural fires seem to play a beneficial role in maintaining dusky habitat (primarily by eliminating woody vegetation); winter wildfires have contributed to population reductions. Ranchers frequently burn cordgrass to improve pastures, but the fires often run wild, displacing duskies to nearby areas outside their preferred range. A catastrophic fire in 1975 destroyed most of the remaining habitat in the vicinity of the St. Johns Refuge (after which only 11 of 47 males survived), and many believe it signalled the dusky's demise.

• Merritt Island

Dusky seaside populations were probably stable on Merritt Island prior to the mid-1940's, when several thousand birds were estimated to inhabit these marshes. The impoundment of marshes on the island from 1945-1955 (for mosquito control) and subsequent changes in the saltmarsh vegetation reduced the population to four colonies totalling 70 pairs in the early 1960's. By 1977, only two males were located on Merritt Island, and none in a 1978 survey.

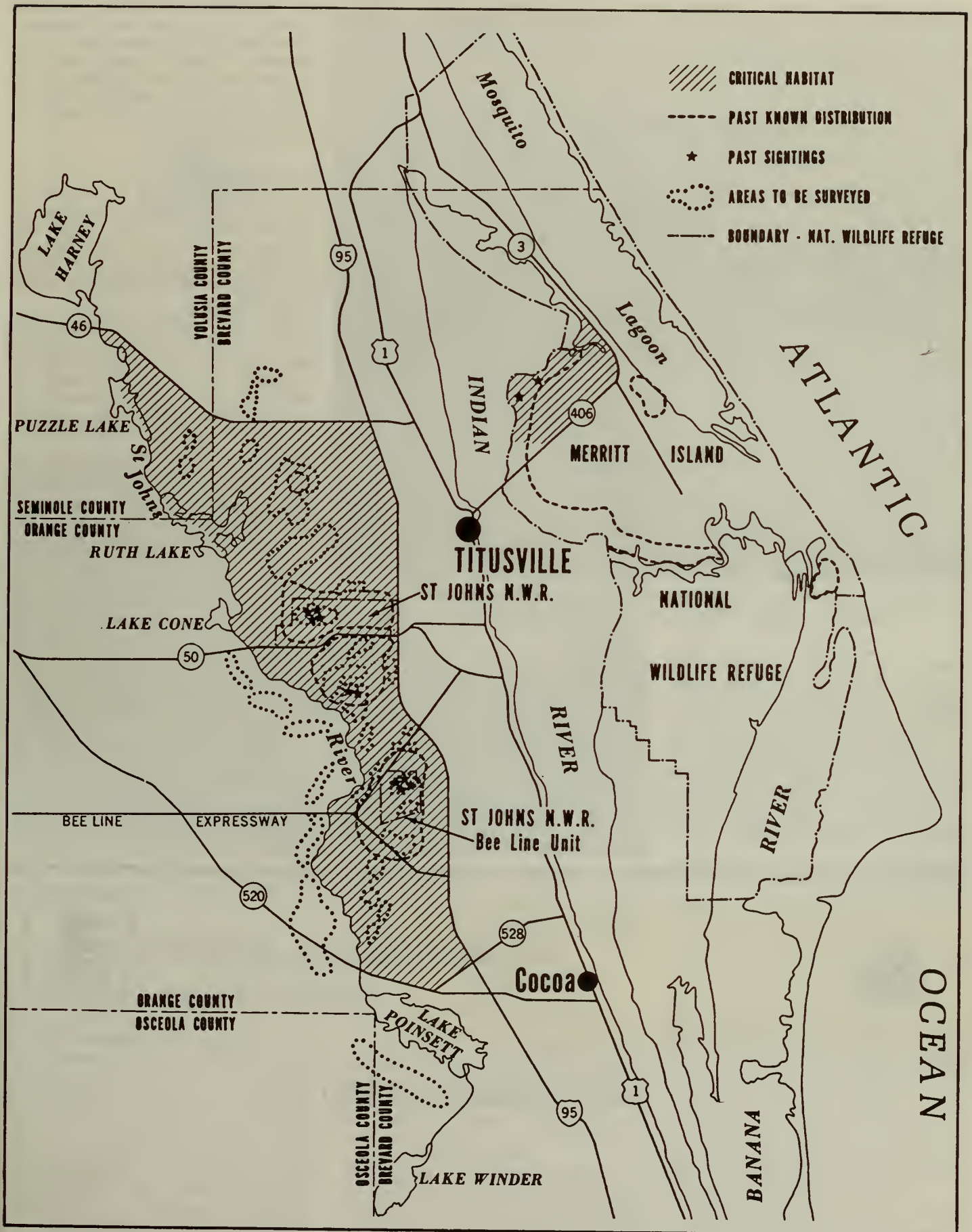
While in recent times mosquito control has been a necessity on Merritt Island, a number of experts expressed concern over the impacts of insecticide use and water control measures shortly after the dusky was listed as Endangered under 1966 legislation. But conservation efforts on Merritt Island were complicated by a number of factors.

For one thing, management of the refuge has been a cooperative venture, as Merritt Island is managed for fish and wildlife resources by our Service, but is owned by the National Aeronau-

tics and Space Administration (NASA). A third managing agency, Brevard County, also shares responsibility on refuge lands for mosquito control purposes.

(Jack Salmella, head of the County's mosquito control program, urged the Service to assess the possible impacts of impoundment and other control measures late in the 1960's. Subsequent Service studies showed that constant water levels destroyed cordgrass on which the dusky depends. A dike was removed, but too little was done too late.)

Many concerned with the decline of the dusky attribute its extirpation from the island to a mood of complacency—at one time looking to former St. Johns population levels as a hedge against extinction. Still others say conservation efforts failed because the dusky just was not "glamorous" enough to worry about. (The State designated a dusky seaside sparrow awareness month back in 1976, but a subsequent Service publicity conference engendered the interest of only



The dusky seaside sparrow once ranged in portions of Merritt Island and throughout the St. Johns River Basin. The last recorded sightings on Merritt Island (1977) and in the vicinity of the St. Johns NWR (1979) are shown above—all occurring within the area designated on August 11, 1977, as Critical Habitat for the dusky. This year's survey effort will focus on suitable habitat near the St. Johns River.



Drainage of the upper St. Johns River Basin for agricultural purposes has altered the hydroperiod—no longer sufficient to maintain marsh habitat.

gies can be tested. As part of the plan, Gee will try to develop optimum techniques for cryogenic preservation (frozen storage) of sparrow semen—a delicate process that may take three or more years to perfect—which could allow us to preserve the remaining dusky gene pool. The establishment of a dusky sperm bank would then not only provide frozen material to supple-

ment fresh semen for insemination of females (should they be found this year or in the future); it will also allow the use of this frozen semen in generations to come, thereby off-setting the unavoidable effects of inbreeding with such a small captive population.

Without the development of a healthy, "adaptable" population of duskies, further habitat management,

land acquisition, and other recovery measures could in the end prove futile. In the meantime, however, habitat restoration and other management precautions will be accelerated in the hope of eventually restocking captive-reared duskies to suitable habitat in their historic range.

Comments Solicited

Florida's request for an amendment to its existing permit—allowing the possible removal of all remaining dusky seaside sparrows from the wild (in addition to the 3 now in captivity)—was published in the March 25, 1980, *Federal Register*.

While the comment period for this permit application officially expires April 23, 1980, the Service wishes to encourage the interested public to comment on this proposal through the duration of the spring survey effort. In recognition that capture of these individuals could place the entire remaining population of this subspecies under human care, every possible alternative course of action (concurrent with initial survey results) will be considered before a decision is made concerning the taking of duskies from the wild. Concurrence of the Service's Atlanta Regional Director would also be sought before any taking of nestlings or adult birds. Moreover, an intra-Service consultation on the matter must be completed in accordance with Section 7 of the Endangered Species Act before any final action on the permit request.

Kindly forward comments to the Director (WPO), (reference file number PRT 2-4329) U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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A California Condor is seen here incubating an egg in its sandstone nest. The subsequent hatching was the first such event observed in the wild in over three decades.

CALIFORNIA CONDOR CHICK HATCHES

For the first time in over three decades, scientists have observed the hatching of a California condor (*Gymnogyps californianus*) in the wild. Biologists at the Condor Research Center in Ventura, California, say the chick began "pipping" its way through its greenish white, 5-inch egg on Sunday, May 11, and hatched sometime before dawn on Wednesday, May 14.

A 9-member team of Fish and Wildlife Service and National Audubon Society researchers had been surveying historic condor nesting sites in the southern mountains of California when

they discovered the mated pair inspecting suitable nesting sites the first week in March. Observers spotted the solitary egg—laid sometime between the 15th and 16th of March—in a sandstone pocket on a cliff ledge several hundred feet high.

Biologists monitoring incubation of the egg through a telescope more than a quarter of a mile away noted that both birds took turns sitting on the nest. The actual incubation period (documented for the first time at about 59 days) appears very close to that of the Andean condor (*Vultur gryphus*),

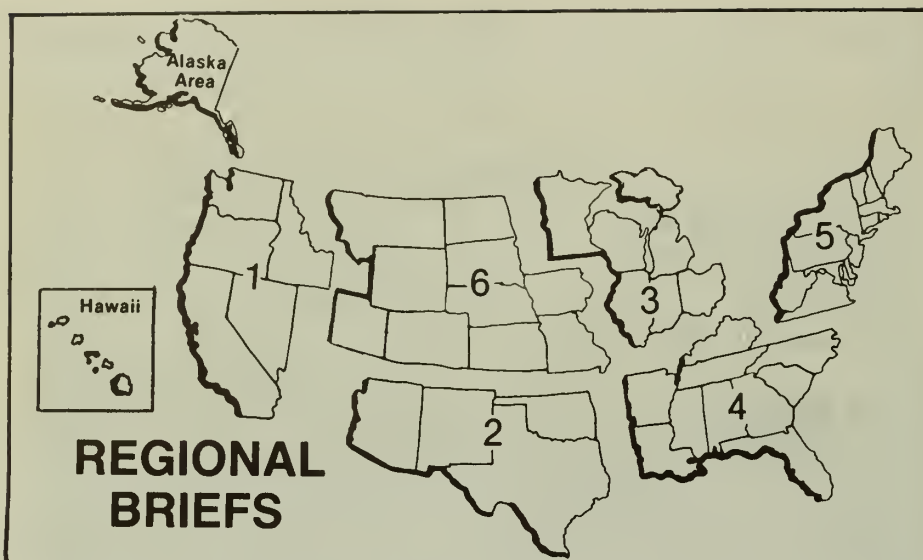
also an Endangered cathartid that has been successfully bred in captivity at the Service's Patuxent Wildlife Research Center and other locations.

Dr. Noel Snyder, who coordinates Service research activities on behalf of the condors as part of the overall Service/National Audubon Society program based at the Ventura center, reports that the adults are very attentive to the nest, with both taking turns feeding their newborn. The researchers will keep the site under constant surveillance, and will attempt to follow the chick through to the point of independence from its parents. (The young bird should leave the nest in October-November, but will remain dependent on the adults for about another 6 months.)

The U.S. Forest Service has sealed off the nesting site and posted a guard in the area to prevent human disturbance, a serious problem throughout the condors' extensive range.

Although scientists are anxious to witness the activities of the newly hatched chick, Snyder cautions that this new breeding and behavioral knowledge will still not give us sufficient information to save the California condor. "We need so much more data on the problems now facing the condor and direct causes of its precarious status before we can ever hope to help the species recover. I'm afraid we must now depend on radio telemetry and other research to help us answer those questions." (See accompanying story.)

The research team is now also following the activities of a 1-year old condor discovered about the same time as the egg. The bird has left its nesting site, and is becoming increasingly independent.



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of April.

Region 1. Five sub-adult whooping cranes (*Grus americana*) have returned to Idaho from their New Mexican wintering grounds.

Four of the whoopers are at Grays Lake National Wildlife Refuge and one is reported near Bear Lake National Wildlife Refuge.

At Hawaii Volcanoes National Park, eight captive Nene geese (*Branta sandvicensis*) were killed by a dog

which managed to dig its way under a protective fence. The eight geese represented approximately a third of the captive breeding stock.

Region 2. Kemp's Ridley sea turtles are nesting in Mexico with 3,000 eggs expected to be brought to the U.S. for hatching and release or grow-out studies (involving radio tracking, tagging, monitoring of environmental factors, and protection). Two hundred yearlings from 1979 stock, weighing about 3 lbs. each, will be returned to Mexico. The remainder will be released off the west coast of Florida in June.

The Service has begun trapping peregrine falcon spring migrants on Padre Island in cooperation with the U.S. Army. Over 100 birds have been trapped, banded, and had blood samples taken. There will be limited samples for comparison since some birds were previously trapped and had blood analyzed in past years.

A Houston toad (*Bufo houstonensis*) brochure has been published and copies are available from the Albuquerque Regional Office.

Region 4. As an update and correction of the report on snail darter (*Percina tanasi*) propagation on this page in the April 1980 BULLETIN, the Tennessee Valley Authority (TVA) has reported little success with ongoing efforts. The 1,662 eggs taken during March yielded only 30 larvae, none of which survived. The larvae generally succumbed at the rate of a few each day for no discernable reason. An additional 100 eggs obtained late in April, just as the spawning season was coming to a close, produced only 11 larvae. These have been placed into a more "natural" substrate in the lab in the hopes of obtaining better results.

TVA personnel sampled the Holston River transplant area on April 28 and 30 and turned up seven snail darter males in excellent spawning condition. Unfavorable water flow is expected to preclude further sampling this spring. A summer survey is planned to document spawning success.

Region 5. A public meeting concerning the proposed listing of Robbins' cinquefoil (*Potentilla robbinsiana*) as an Endangered plant was held in Concord, New Hampshire. Ten persons attended and all endorsed the proposal.

A progress meeting of the Virginia round-leaf birch committee was held in Roanoke, Virginia. The major topic of discussion was the drafting of the recovery plan.

Alaska Area. Recent counts of Aleutian Canada geese (*Branta canadensis leucopareia*) on the spring staging grounds in California indicate a population of over 1,400—the highest number ever recorded.

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COMMENTS SOLICITED ON PERMIT TO CAPTURE AND TAG CALIFORNIA CONDORS

As part of a multi-agency campaign to restore the ever-dwindling numbers of California condors (*Gymnogyps californianus*), our Service's Patuxent Wildlife Research Center has submitted a permit application necessary to allow its participation in the capture, marking, and captive propagation of this critically Endangered species (F.R. 5/9/80—pp. 30996-30997).

The permit request represents the initial step in implementing the recovery plan for the condor—a comprehensive cooperative program involving our Service, the National Audubon Society, the U.S. Forest Service, the Bureau of Land Management, and the California Department of Fish and Game. Most experts now look to human intervention—in the form of an emergency habitat protection, tagging, research, and captive propagation effort—as the only hope for saving the estimated 20-30 surviving condors from continued decline to the point of extinction.

Under the proposed program, trapping of condors would begin in September 1980 after capture methods and transmitters tested on Andean condors (*Vultur gryphus*) in Peru this summer are proven successful. Initially, no more than three California condors would be captured and fitted with wing-mounted, solar powered radio transmitters this fall to assess the feasibility of continuing with the tried method of capture. If no unresolvable problems have arisen after one month of evaluation, then trapping would resume until a total of ten birds are fitted with transmitters. (No birds will be captured from February 1, 1981, to the latter part of the summer to prevent harassment during the breeding season.) Movements of the fitted birds would then be tracked throughout their range through an array of fixed antenna towers.

Once captured, all birds will be sexed by one or more methods (laparoscopy seems the most promising at this time), and blood and other tissue samples will be taken for analysis. The long-term objective of the captive propagation plan—intended to supplement the wild population—is to take five unpaired female condors and four unpaired males from the wild to provide a captive breeding stock of five pairs (to be distributed among three raptor propagation facilities).

Project personnel will attempt to capture one sub-adult female between September 1980 and February 1981 to be paired with "Topatopa", the only (male) condor in captivity at the Los Angeles Zoo. (Further taking of captive stock—after the initial female—would not be implemented until the telemetry program demonstrates which birds would qualify as unpaired adults.)

The California Fish and Game Commission voted on May 30 in favor of

authorizing a State permit to allow the taking of condors from the wild in their native California range.

(Permit issuance is conditioned by Service adoption of Fish and Game Department recommendations to promote Federal-State coordination throughout the research program.)

Applicable portions of the program would be initiated only after a thorough review of data received in the Andean condor release, capture, and tagging program this summer.

Interested persons are invited to comment on the Federal permit request by submitting written data, views, or arguments to the Director (WPO), U.S. Fish and Wildlife Service, Washington, D.C. 20240 (reference PRT 2-6563) by June 23, 1980.

RECOVERY SCHEDULED FOR CALIFORNIA LEAST TERN, BLUNT-NOSED LEOPARD LIZARD

Recovery plans have been approved by the Service for two Endangered species occurring in California, the California least tern and the blunt-nosed leopard lizard.

California Least Tern

The California least tern (*Sterna albigula browni*) is a migratory subspecies with a breeding range usual-

ly described as extending along the Pacific coast from Moss Landing, Monterey County, to San Jose del Cabo, southern Baja California, Mexico. Migration routes and winter distribution of the California least tern are almost unknown. Because several races of least terns are recognized in western Mexico, and most differences in subspecific plumage are observable

continued on page 4



Photo by Luther C. Goldman

Ocean beaches were once common nesting grounds for California least terns, but human activity has made them uninhabitable for the subspecies.



U.S. Fish and Wildlife Service photo

Habitat destruction from agricultural development has been the most serious threat to the blunt-nosed leopard lizard.

RECOVERY FOR TERN, LEOPARD LIZARD

continued from page 3

only in breeding plumage, racial allocation of wintering birds is seldom possible without banding or special markings done prior to migration. From 1954 to 1972, 508 of the birds were banded on their breeding grounds; from 1973 to 1977, 714 least tern chicks were banded. As of 1977, 14 banded terns have been recovered, all in California during the breeding season.

Least tern nesting locations are usually in an open expanse of sand, dirt, or dried mud beside a lagoon or estuary serving as a food source. Ocean beaches were commonly used, but increased human activity on the beaches has made most of them uninhabitable for least terns. Recently, most observed nesting has occurred on mud and sand flats away from the ocean, or on man-made land fills.

A decline in population numbers of the California least tern has occurred since the early 1900's. In 1909, a colony of about 600 pairs along a three-mile stretch of beach in San Diego County was described. Construction of the Pacific Coast Highway along previously undisturbed beach, and the building of summer cottages and beach homes began to displace least tern colonies. At the same time, their bay feeding areas were being developed, filled in, and polluted. By the 1940's, most terns were gone from the beaches of Orange and Los Angeles Counties, and were considered sparse everywhere. Loss of nest-

ing and feeding habitat, and human disturbance continue to threaten this subspecies.

To secure protection of the California least tern, the recovery plan suggests the breeding population be increased to at least 1,200 pairs (about double 1977 levels) in colonies in at least 20 coastal wetland ecosystems throughout their 1977 breeding range. The major limiting factor to the number of breeding pairs, according to the recovery plan, is the availability of suitable nesting habitat. Therefore, habitat protection, management, and acquisition have been given the highest priority in the recovery plan.

In California, only eight currently used colony nesting sites are protected under State, Federal, or other public ownership or jurisdiction. The others are in areas either affected by human disturbance, where land use threatens the suitability of the size, or where management programs are difficult to implement. For some of these areas, the recovery team believes that construction and protection of alternate nesting sites would be preferable to protecting currently used, but vulnerable sites.

The recovery plan also recommends the protection of feeding areas. Especially important are feeding areas used by least tern adults and their young after the nesting season and before their southern migration.

To encourage new colonies of least terns to form in potential breeding habitats and to allow for expansion of existing colonies, the recovery plan

suggests development of new nesting sites and restoration of abandoned nesting and feeding areas. Least terns are receptive to man-made bare ground areas as nest sites as evidenced by the fact that 23 man-made land fills were used as nest sites from 1969 to 1977. In 1975 and 1976, 60 percent of known breeding pairs nested on man-made substrates.

The recovery team calls for the establishment of a Mission Bay Least Tern Coordinating Committee to guide local habitat enhancement and protection efforts in Mission Bay, in San Diego, a major least tern nesting and feeding area. The committee should include representatives from the City of San Diego, California Department of Fish and Game, U.S. Fish and Wildlife Service, Federal Aviation Administration, and California Least Tern Recovery Team. It is recommended that local Fish and Game Department biologists lead this program.

Other activities outlined in the recovery plan include protecting colonies from predation and human disturbance, and conducting research on the breeding biology of least terns and their habitat requirements and management.

Blunt-Nosed Leopard Lizard

The blunt-nosed leopard lizard (*Gambelia silus*) occurs in undeveloped areas of the San Joaquin Valley and surrounding foothills. Agricultural development in the valley has eliminated many leopard lizard popu-

lations, and the species' numbers continue to decline. According to one estimate, about 50 percent of the reptile's original range has been lost to agricultural and urban development by the 1950s. The status of the lizard in the foothills east of the San Joaquin Valley is uncertain, with no recent sightings north of Kern County.

Habitat destruction has been the most significant factor in reducing this species' range and population numbers. Leveling and cultivating of arid lands in the valley has proceeded at an alarming rate. Of the 618,800 acres of wildlands remaining in 1976, about 228,000 acres on the valley floor were identified as lizard habitat. By April 1979 this habitat had been reduced to 170,400 acres—a loss of 19,200 acres per year.

Other land uses, such as grazing and mineral development, have had a negative impact on the species' habitat.

The objective of the recovery plan is to restore blunt-nosed leopard lizard populations to 1979 levels or above by maintaining well-distributed, suitable habitat units. Current population densities are usually less than one individual per acre.

The plan calls for identification of all lands within the historical range of the species and a survey of the occurrence of the lizard in these areas. A series of aerial surveys conducted annually since 1976 has provided a set of county maps showing potential habitat remaining on the San Joaquin Valley floor in April 1979. (Mapping of potential habitat outside the valley has not been completed.)

According to the recovery plan, the restoration and maintenance of leopard lizard population levels is dependent upon a good understanding of the species' habitat requirements and biological needs. Basic habitat requirements have been determined and

habitat types described. The lizards occur on sparsely vegetated plains, low foothills, canyon floors, and large washes and arroyos. They usually do not occur in dense brush or on steep slopes. Population densities can be correlated with the number of mammal burrows present. Where these burrows are scarce, the lizards construct shallow, simple-chambered tunnels under exposed rocks or along banks of earth. Abandoned or occupied kangaroo rat burrows and abandoned squirrel burrows are used as permanent shelter.

Other steps recommended by the recovery team include effective enforcement of laws protecting the lizard and its habitat, monitoring land use changes through ground and aerial surveys, monitoring population trends where possible, and encouraging local governmental agencies and landowners to establish zoning laws and plan development to minimize mortality and habitat destruction.

MANATEE RECOVERY SLATED

In a continuing effort to improve the status of the West Indian manatee (*Trichechus manatus*), a critically Endangered marine mammal, the Service has approved a recovery plan that identifies necessary actions for preventing further decline of the species in U.S. waters. Earlier this year, the Service designated a portion of Kings Bay in Florida's Crystal River as an emergency refuge for the manatee (see January 1980 BULLETIN) and established restrictions for water-related public use on Merritt Island and Chassahowitzka National Wildlife Refuges (see February 1980 BULLETIN).

The thrust of the recovery plan is minimizing human-caused injuries and mortalities to manatees. According to the plan, reducing mortality is the fastest and most direct method of stabilizing or increasing manatee populations. Of 305 dead manatees salvaged from April 1974, through June 30, 1979, 103 were human-related mortalities. More than half of these involved collisions with boats. The plan recommends examination of the nature, extent, and location of these injuries and mortalities through salvage and necropsy, rescue and rehabilitation, and observation of interactions between manatees and objects that harm or kill them.

Minimizing habitat alteration, degradation, and destruction is another objective of the recovery plan. To ac-

complish this, the recovery plan has outlined the need to identify habitats of special biological significance to manatees, characterize these habitats, identify potential hazards to manatee habitats, and monitor the status of essential habitats.

The manatee is currently protected

under the Florida Manatee Sanctuary Act of 1978, which established the entire State of Florida as a "refuge and sanctuary for the manatees," the Marine Mammal Protection Act of 1972, and the Endangered Species Act of 1973. A continued cooperative effort between Florida and the Federal Government will be required for the successful implementation of this recovery plan.

CITES ANNUAL REPORT, APPENDICES LISTS AVAILABLE

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Annual Report for 1978 is available for sale from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 for \$4.75. To order a copy, refer to stock number 024-010-00542-4. The annual report

was prepared by the Service's Wildlife Permit Office.

The Wildlife Permit Office has reprints of the CITES appendices as amended at the meeting of party nations in Costa Rica in March 1979. Copies are available in limited supply from the U.S. Fish and Wildlife Service, Wildlife Permit Office, Department of the Interior, Washington, D.C. 20240.

NEW PUBLICATION

A manual, *Threatened and Endangered Plants of Alaska*, was published jointly by the U.S. Forest Service and the Bureau of Land Management. Including descriptions of over 30 plant taxa and their habitats, the manual is

designed for use as a field reference. Copies are available from either Steve Talbot or Lyle Linnell, Bureau of Land Management, State Office, 701 C Street, Box 13, Anchorage, Alaska 99513.

ENDANGERED STATUS, CRITICAL HABITAT SET FOR RED-BELLIED TURTLE

One of the North America's rarest reptiles, the Plymouth red-bellied turtle (*Chrysemys rubriventris bangsi*), is now protected in its only known habitat in Massachusetts with final Service designation of Critical Habitat and Endangered classification (F.R. 4/2/80).

Background

The Plymouth red-bellied turtle was initially proposed for listing as an Endangered species, with 11 ponds proposed for designation as Critical Habitat, on May 19, 1978 (see the June 1978 BULLETIN) subsequent to a review of its status previously initiated by the Service (F.R. 6/6/77).

In accordance with 1978 amendments to the Endangered Species Act, the initial Critical Habitat proposal was withdrawn on March 6, 1979, and subsequently repropounded on September 13, 1979, to include an area approximating 7,000 acres in Plymouth County, Massachusetts, on the basis of new information submitted by Dr. James D. Lazell, Jr. (see the October 1979 BULLETIN). Public meetings and hearings on the Critical Habitat proposal were held on October 17, 1979, and on January 15 and 29, 1980.

Status and Threats

While its population was estimated at under 200 in the Service's original listing proposal, recent surveys indicate that possibly no more than 50 Plymouth red-bellies survive today. Only 41 animals were captured in intensive surveys conducted since 1978 by Dr. Terry Graham (under contract to the Service). All have been found in ponds within the area now designated as Critical Habitat in Plymouth County (with the turtle's existence as yet unconfirmed in Dukes County, where it was known to occur).

This species is extremely vulnerable to habitat modification, primarily in the form of housing development and road construction, which has been a major threat. There have been reports of human harassment, and collection and predation may also threaten the turtle's survival.

The turtle is known to wander extensively (especially in search of nesting sites), and to bask and feed on lands surrounding the ponds on which it depends. While the 11 ponds proposed are included in the final Critical Habitat for the turtle, the surrounding areas have been reduced from that originally proposed to a total of 3,269 acres, based on Graham's studies of the needs and ecological requirements of the species. As far as can be determined, the designated area contains sufficient space for the population to survive and reproduce successfully.

Any significant alteration of pond water levels (as by groundwater pump-

ing) or quality (as from siltation from land clearing or pollution) which would reduce or eliminate vegetation or aquatic prey items could adversely modify the turtle's Critical Habitat, as aquatic vegetation serves as both food and shelter for the species. Shoreline modification, filling, and dredging for beaches, dikes, real estate development or other similar activities or the draining of wetlands could also affect water quality, levels of shoreline, and nesting and over-wintering sites for the species.

[While there is considerable evidence suggesting that the generic name be limited to painted turtles, there remains some controversy as to the proper name for this species. Until taxonomic work is published on this generic separation, the Plymouth red-bellied turtle will be listed as *Chrysemys* (= *Pseudemys*) *rubriventris bangsi* to eliminate confusion.]

BONYTAIL CHUB ENDANGERED

Habitat alteration and other factors have so reduced the numbers of the bonytail chub (*Gila elegans*) that the Service has listed this fish as an Endangered species (F.R. 4/23/80).

Once found in the larger turbid rivers throughout the Colorado River basin, the bonytail has been on the decline since the early 1960's. Recent surveys of streams and reservoirs within its historic range indicate that the species is now confined to Lake Mohave along the Arizona and Nevada border. Chubs have not been located in the Green, Gunnison, Gila, and Salt Rivers where they were known to survive in eddies adjacent to swift waters.

Impoundment and diversion of the Colorado River and its tributaries has been a major factor threatening the bonytail's survival, coupled with competition and predation from introduced fish species. (Exotics now outnumber native fishes in the Colorado River basin.)

The population of bonytail chubs within Lake Mohave consists of only old individuals, and biologists have never observed successful reproduction within the reservoir. Lake Mohave's cold tailwaters do not offer the warm (65° F) temperatures needed for spawning, thereby precluding the

species' successful utilization of this artificial habitat. Unless reproduction is achieved, remaining populations in the reservoir will likely disappear as the fish senesce and die. (Attempts are now under way to propagate bonytails in captivity at the Service's Willow Beach Fish Hatchery in Arizona.)

Because the area now inhabited by the bonytail chub does not provide adequate sites for breeding, reproduction, and the rearing of offspring, Critical Habitat may not now be determined for this species under the requirements of the Endangered Species Act, as amended.

The species had been proposed for Endangered classification on April 24, 1978 (see the May 1978 BULLETIN).

Reference Note

All Service notices and proposed and final rulemakings are published in the *Federal Register* in full detail. The parenthetical references given in the BULLETIN—e.g., (F.R. 1/17/80)—identify the month, day, and year on which the relevant notice or rulemaking was published in the *Federal Register*.

ENDANGERED STATUS FOR GOODENOUGH GAMBUSIA

The Goodenough gambusia (*Gambusia amistadensis*)—a fish now extirpated from its only native habitat—has been listed by the Service as Endangered (F.R. 4/30/80).

Known only from Goodenough Spring, a tributary to the Rio Grande River in Val Verde County, Texas, the wild population of this gambusia disappeared following destruction of its habitat by U.S. Army Corps of Engineers impoundment activities. In July 1968, backwaters of the Corps' Amistad Reservoir began permanent flooding of this area, leaving the spring under more than 70 feet of silt-laden water with no evidence of surviving gambusia.

Today, the Goodenough gambusia exists only in captivity at the University of Texas and at the Dexter National Fish Hatchery in New Mexico. (As a result, Critical Habitat determination as called for under the Endangered Species Act as amended would not be prudent for the species at this time.) The Service hopes that it may eventually be possible to re-establish the species in the wild.

The species was proposed for Endangered classification on August 15, 1978 (see the September 1978 BULLETIN).

CALIFORNIA MOTH LISTED AS THREATENED

The Kern primrose sphinx moth (*Euproserpinus euterpe*), occurring only in the Walker Basin of Kern County, California, has been classified by the Service as a Threatened species (F.R. 4/8/80).

Once thought to be extinct, the Kern primrose sphinx moth was re-discovered in a barley field in Kern County in 1974—apparently in the same area where it was first collected. Due to its extremely low numbers and susceptibility to collecting, Dr. Paul M. Tuskes petitioned the Service to list the insect for protection under the Endangered Species Act in March 1977. The Service subsequently published a proposal to list the species as Threatened on July 3, 1978 (see the August 1978 BULLETIN), and held a public meeting on the proposal on September 18, 1979.

Occurring in very low densities only in the Walker Basin, the largest colony of moths occupies a barley field on a cattle ranch where present management will not likely threaten the species. (Any changes in land management practices on other habitat within the Walker Basin could affect its populations, however.)

Due to its rarity and restricted distribution, potential overcollection is considered a major threat to the species. It has been estimated that single specimens may be worth as much as \$100 to sphingid moth collectors. Collection of females—more vulnerable

as they fly more slowly than males—could affect the reproductive success of the moth.

In 1979, when a larger than usual number of moths was observed (apparently representative of several different year's age classes that emerged simultaneously under favorable weather conditions), many females were observed ovipositing on filaree—an exotic weed unsuitable as a larval host plant. It is believed that natural selection is currently strongly favoring females which lay eggs on the larval food plant, an evening prim-

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PUBLIC MEETINGS/HEARINGS

Due to the often unavoidable short notice in scheduling public meetings and hearings (in compliance with 1978 Amendments to the Endangered Species Act) for certain listing and Critical Habitat proposals, we regret that we cannot always relay adequate notice to our readers. Until further notice, we will attempt to provide available information through this column. Due to space limitations and uncertainty of *Federal Register* publication dates, summaries of pertinent proposed rulemakings may not necessarily accompany meeting notices, but may be included in a subsequent issue of the *Bulletin*.

Species/Action	Affected State(s)	Locations of Meetings/Hearings	Date	Time
Devil's River minnow: Reproposed C.H.	TX	Meeting: Del Rio Civic Center, Del Rio	6/12/80	7:00 p.m.
Leon Springs pupfish: Reproposed C.H.	TX	Meeting: Commerce Bldg., Ft. Stockton	6/13/80	7:00 p.m.
Coachella Valley fringe-toed lizard: Reproposed C.H.	CA	Meeting: Palm Springs Spa Hotel, 100 N. Indian Ave. & Tahquitz Drive, Palm Springs	6/20/80	7:30 p.m.
		Hearing: (as above)	7/7/80	7:30 p.m.
Mountain golden-heather: Proposed T and C.H.	N.C.	*Meeting: Western Piedmont Community College Auditorium, Morganton	7/1/80	7:00 p.m.

* Tentative
E—Endangered
T—Threatened
C.H.—Critical Habitat

RAPTOR MEETINGS

The Sierra Club is sponsoring the 1980 PENNSYLVANIA RAPTOR CONFERENCE to be held Saturday, June 14, from 9:30 a.m. to 5:30 p.m. at Dickinson College in Carlisle. The conference is non-technical in nature and will focus on problems relating to birds of prey in Pennsylvania. If you are interested in attending, write to the Sierra Club, P.O. Box 135, Cogan Station, Pa. 17728. Fees are \$3.00 for

preregistration and \$3.50 for walk-in registration.

A two-day SYMPOSIUM ON THE BALD EAGLE IN WASHINGTON will be held June 14-15 at the Seattle Aquarium, Pier 59 in the Waterfront Park. Proceedings of the Symposium will be published and are included in the registration fee of \$5.00 (covering attendance of the symposium only). A \$14.00 fee includes dinner Saturday night at the Edgewater Inn. Send registration fees to Washington Bald Eagle Symposium, c/o Seattle City Light, Environmental Affairs, 1015 Third Avenue, Seattle, Washington 98104.

CALIFORNIA MOTH

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rose (*Oenothera contorta epilobioides*). Collecting during the flight and oviposition period could therefore reduce the genetic variability necessary to insure maintenance of a fit population.

The publication of maps detailing the location of the Kern primrose sphinx moth would make this species even more vulnerable to taking by collectors. The Service has therefore determined that the designation of Critical Habitat for the insect would not be prudent.

FIVE MUSSELS UNDER REVIEW

The Service is reviewing the status of five mussels found in Alabama and Mississippi to determine if they should be listed as Endangered or Threatened species (F.R. 4/11/80). All five species—the Curtus' mussel (*Pleurobema curtum*), Marshall's mussel (*Pleurobema marshalli*), Judge Tait's mussel (*Pleurobema taitianum*), penitent mussel (*Epioblasma penita*), and stirrup shell (*Quadrula stapes*)—typically inhabit silt-free shoal areas of sand and/or gravel, with a moderate to swift current.

The Service is seeking the views of the Governors of Mississippi and Alabama and any other interested parties, and requests any data relating to the status, distribution, population trends, or potential threats to these species. Also requested is information on areas that may qualify as Critical Habitat, and any associated economic or other impacts of such a designation.

Information should be submitted on or before July 11, 1980, to the Director (OES), U.S. Fish and Wildlife Service,

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	35	251	286	3	21	24
Birds	67	145	212	3		3
Reptiles	12	55	67	10		10
Amphibians	5	9	14	2		2
Fishes	31	11	42	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	3		2
Plants	49		49	7	2	9
Total	231	474	705	45	23	68

Number of species currently proposed: 35 animals
(1 plant)

Number of Critical Habitats determined: 36

Number of Recovery Teams appointed: 68

Number of Recovery Plans approved: 35

Number of Cooperative Agreements signed with States:
35 (fish & wildlife)
4 (plants)

April 30, 1980

Department of the Interior, Washington, D.C. 20240.

SNAKE RIVER SNAILS REVIEWED

Two snails, remnants of the extensive late Pleistocene freshwater fauna of southern Idaho, are being reviewed by the Service to determine if a proposal to list them as Endangered or Threatened species is warranted. The Bliss Rapids snail (Family Hydrobiidae) and Snake River physa snail (*Physa* sp.) are both found in the shallow water riffle habitat in the A. J. Wiley Reach of the Snake River, with the

Snake River physa snail also found near Homedale, Owyhee County, Idaho.

The habitat of both species in the A. J. Wiley Reach is threatened by impoundment from the Idaho Power Company's A. J. Wiley Project.

The Service is soliciting any additional information on these species, including data on their taxonomic status, distribution, habitat requirements, recommended Critical Habitats, and possible economic or other impacts of a Critical Habitat designation. Comments and data should be submitted on or before July 22, 1980, to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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BORAX LAKE CHUB PROTECTED UNDER EMERGENCY RULE

Acting to safeguard this species from the destruction of its aquatic habitat, the Service has listed the Borax Lake chub (*Gila* sp.) as Endangered and designated its Critical Habitat under an emergency rulemaking (F.R. 5/28/80).

This fish is found only in Borax Lake (a small, 10-acre natural water body fed by a thermal spring) and its outflow, and in Lower Borax Lake in Oregon's Alvord Basin. Over time, the chub has become isolated from the surrounding watershed as the lake's perimeter has risen from mineral precipitation. Because of its position above the valley floor, the fragile Borax Lake ecosystem is extremely vulnerable to destruction by human modification for irrigation. The lowering of water levels from alteration of the lake's perimeter could adversely impact the chub by decreasing the lake and adjacent marsh habitat and by increasing water temperatures.

Geothermal development is also a major threat to the survival of the Borax Lake chub. Drilling activity in the valley floor could tap into hot water aquifers servicing remaining habitat, thereby altering both the pressure and temperature of thermal springs that maintain the lake.

Some geothermal leases have already been issued in the area by Interior's Bureau of Land Management (BLM), and additional leases are now planned. Although BLM has indicated that exploratory drilling would not begin for several months, listing of the chub and delineation of its Critical Habitat under the Endangered Species Act will insure consideration of the



Photo by Jack Williams

The Borax Lake chub will receive Endangered Species Act protection for 240 days—enough time to allow for consideration of the species' welfare during plans for geothermal development in its habitat.

species' welfare during Federal environmental planning.

Endangered status and Critical Habitat designation (inclusive of areas required by the species for food and

spawning, as well as additional land as a buffer zone around its aquatic habitat) shall be effective under this emergency rule for 240 days, or until January 23, 1981.

CRITICAL HABITAT REPROPOSED FOR COACHELLA VALLEY LIZARD

The Service has again proposed Critical Habitat designation for the Coachella Valley fringe-toed lizard (*Uma inornata*), a reptile uniquely adapted to sandy habitat in California's Coachella Valley (F.R. 5/28/80).

The species had been proposed for Threatened classification with Critical Habitat on September 28, 1978. However, in line with new procedural re-

quirements imposed under the Endangered Species Act Amendments of 1978, the Critical Habitat portion of the previous proposal was withdrawn on March 6, 1979. (The subject notice proposes a significantly smaller area than initially proposed for designation as Critical Habitat.)

Continued on page 13



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of May.

Region 1. Researchers report that a second California condor (*Gymnogyps californianus*) was recently hatched in

the wild. The actual hatching was not observed as was the case with a condor chick which hatched on May 14 (see May 1980 BULLETIN). This second discovered condor chick is believed to be a couple of weeks older

than the other.

The Hawaii Board of the Department of Land and Natural Resources approved, in concept, a cooperative agreement for Fish and Wildlife Service acquisition of Kealia Pond on the Island of Maui. Kealia Pond is considered essential habitat for the Hawaiian coot (*Fulica americana alai*), Hawaiian stilt (*Himantopus himantopus knudseni*), and Hawaiian gallinule (*Gallinula chloropus sandwichensis*).

At the Patuxent Wildlife Research Center in Maryland, two whooping crane (*Grus americana*) eggs were hatched, but one chick was found dead in the nest. The cause of death is unknown. These eggs are part of the ongoing experiment to establish a wild flock of whoopers with a nesting site at Grays Lake National Wildlife Refuge in Idaho. Eight eggs have hatched at Grays Lake this season, and hatching success on four other eggs will be determined soon.

Region 2. At Rancho Nuevo, Mexico, the number of nesting female Kemp's Ridley sea turtles (*Lepidochelys kempii*) appears to be down from last year, but it is still too early to make final determinations.

Three new sea turtle projects are planned: a program to develop marking techniques for hatchlings in Florida, and two surveys in Costa Rica.

Peregrine falcon (*Falco peregrinus anatum*) radio tagging was accomplished with spring northward migrants. One falcon was tracked from the Texas coast to the Canadian border—the farthest tracking to date. The bird made the trip in eight days.

A pesticide analysis program for peregrines is underway throughout the region.

Region 3. High winds turned a normally routine management practice into a nightmare, as a prescribed burn on behalf of the Endangered Kirtland's warbler (*Dendroica kirtlandii*) was blown out of control near Mio, Michigan, on May 5. The fire, which was set by U.S. Forest Service personnel, was intended to burn a 200-acre area. However, about an hour and a half after the burn started, wind gusts of up to 25 mph caused the flames to spread and burn approximately 28,000 acres of forest land. One firefighter was killed, dozens of homes destroyed, and about 1,000 people were forced to evacuate the area.

As for the warbler, about 100 acres of presently used nesting habitat was burned as well as 200 acres of potential nesting habitat. The fire is not expected to have a detrimental effect on future habitat management, but it will be necessary to change the rotation of areas for prescribed burns. None of

U.S. Fish and Wildlife Service Washington, D.C. 20240

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U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Alaska Area:** Alaska.

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the birds were in the area as they had not yet returned from their wintering grounds in the Bahamas.

Region 4. Survey work to locate the remaining dusky seaside sparrows (*Ammodramus maritimus nigrescens*) has been completed on all of the potential habitat, and some of the more promising areas have been surveyed a second time. The four dusksies found to date have all been males. No evidence of reproductive behavior or of females has been observed.

A total of 13 male dusksies were counted in 1979, three of which were taken into captivity for possible use in a captive breeding program. One of the captive birds was found dead on April 21, 1980.

Region 5. The Service met with landowners in West Virginia to discuss fencing and gating the entrances to caves containing Indiana bats (*Myotis sodalis*) and Virginia big-eared bats (*Plecotus townsendii virginianus*).

Region 6. The Service is optimistic about its efforts to propagate the greenback cutthroat trout (*Salmo clarki stomias*). In 1977, greenbacks were transported from Como Creek, Colorado, to the Fish Cultural Development Center in Bozeman, Montana. In 1978, limited success resulted in a few young greenbacks. In 1979, both sexes spawned simultaneously, and approximately 500 fry were hatched. It is hoped that 1,000 fry can be hatched in 1980.



Northern Rocky Mountain Wolf Plan OK'd

The Northern Rocky Mountain Wolf (*Canis lupus irremotus*), a subspecies of the gray wolf, is slated for efforts to improve its status as outlined in a Service-approved recovery plan. (Although the entire species, *Canis lupus*, is federally protected throughout the 48 contiguous States, this recovery plan only deals with the subspecies *irremotus*. For a discussion of recovery efforts for other populations of gray wolf, see the August 1978 BULLETIN.)

Historically this subspecies occurred in Washington, Oregon, Idaho, Montana, Wyoming, South Dakota, and portions of Alberta and British Columbia in Canada. Its range has been reduced

to scattered sightings in Montana, Wyoming, and Idaho. The decline of the Northern Rocky Mountain wolf has been attributed to land development, loss of habitat, poisoning, trapping, hunting, and the wolf's inability to adapt to most of man's development activities.

The wolf developed a reputation for preying on domestic livestock in the late 19th Century when hunters decimated herds of buffalo and other ungulates which were prey for wolves. Wolves had to turn to alternate prey and thus came into direct conflict with man. Buffalo hunters turned to hunting wolves to protect their livestock.

The objective of the recovery plan is to re-establish and maintain at least two populations of Northern Rocky Mountain wolf within its former range. To achieve this objective, the plan lists three major sub-objectives which must also be reached: (1) The current status and distribution of the subspecies must be determined, (2) perpetuation of the wolf in its present range must be insured (through protection of wolves and their habitat), and (3) populations must be re-established within the subspecies' historic range in areas where viable populations do not now exist.

The team suggests that a clarification of the taxonomic status of *C. l. irremotus* would simplify management planning. Examination of wolf skulls found in and around the subspecies' former range, body measurements on future mortalities in that area, and

comparison of skull measurements and other data collected with other subspecies or geographic races of wolves will help update the classification of wolves. The historical distribution and relative abundance of the Northern Rocky Mountain wolf needs to be determined to provide a reference point against which the present status can be contrasted. According to the recovery team, "The present existence of wolves in the known historical distribution of the Northern Rocky Mountain wolf is documented, but tenuous."

Management of existing wolf populations will involve tasks such as minimizing direct, human-caused mortality, a concerted law enforcement effort, minimizing wolf-human conflicts, regulating predator control programs, and an intensive 3 to 4 year survey in all areas of occupied and suspected Northern Rocky Mountain wolf habitat. This would be used to determine environmental requirements of the subspecies and measures to protect or enhance those requirements. The team also recommends radio tagging wolves to learn more about territory sizes, seasonal patterns of use, and relationships to prey ranges and areas of human use.

Areas for transplanting populations will be selected based on existing and planned land use, vegetation, availability of prey, and impact on human activity. Public attitudes will play a key role in the final selection of transplant sites. Therefore, a public information

Continued on page 4

campaign to gather support in affected areas is an essential element of this recovery plan.

STATE ENDANGERED SPECIES AID RE-AUTHORIZED

On May 23, President Carter signed a bill authorizing funding to continue the Federal Endangered Species Grant-in-Aid Program for another two years.

P.L. 96-246 provides for the appropriation of up to \$12 million for Fiscal Years 1981 and 1982 under Section 6 of the Endangered Species Act of 1973, allowing States now participating in the 2-to-1 matching fund program to carry out ongoing conservation activities for their Endangered and Threatened species. (As of May 1, 1980, 35 States had entered into cooperative agreements with the Service for the management and protection of endangered fish and wildlife, while another 4 are now involved in cooperative agreements to assist listed plants—allowed under 1978 amendments to the Act.) The increased authorization should also allow a number of additional States to receive Federal matching fund assistance under recently relaxed eligibility requirements designed to bring otherwise “disqualified” States into the grant-in-aid program (see the January 1978 and June 1979 BULLETINS).

President Carter had previously signed legislation authorizing an additional \$2 million to keep participating State programs on their feet through FY 1980, when only \$3 million in appropriations (out of an estimated \$5 million needed) were originally requested. (See our feature on the grant-in-aid program in the December 1979 BULLETIN).

This latest amendment restates the authorization through FY 1980 (not to exceed \$12 million for the period beginning October 1, 1977, through September 30, 1980—thereby accommodating that amount already authorized and appropriated together with the \$2 million add-on) and authorizes an additional \$12 million to carry Section 6 funding through September 30, 1982.

ALERT: CITES Notices

A number of notices are being published in the *Federal Register* with regard to U.S. actions under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the upcoming meeting of CITES Parties in New Delhi. While we do not have the space to devote to lengthy summaries of all recently published notices, we call your attention to the following which may be of interest:

- **Agenda, Third Conference of the Parties.** The Service's Wildlife Permit Office (WPO) has published a provisional agenda, with explanation of a number of items and draft resolutions—for the Third meeting of CITES Parties in New Delhi, India, February 2-13, 1981. Kindly consult the May 9, 1980, *Federal Register* for details.

- **Proposed revised implementation rules.** WPO has published a proposal to “regularize” the processes through which the public and concerned agencies may participate in the development of negotiating positions at meetings of the parties (F.R. 5/20/80). (A tentative schedule of meetings is available from the Service's Wildlife Permit Office—Attention: Mrs. Joan Anthony.)

- **Proposed Findings of nondetriment in response to U.S. District Court injunction on (1979-80) export of Bobcats (*Lynx rufus*).** Due to the necessarily short comment period provided on the subject notice (F.R. 5/21/80), we shall reserve space for a full report on the Service's notice of “final” findings, likely to be published by July 1, in our July issue. (Final approval of such exports (for the 1979-80 taking season) will depend on a favorable ruling by the courts.)

Upcoming Notices

Interested parties should look for the following notices—upon which the Service seeks active public involvement—in the *Federal Register* before July 1:

- Preliminary notice of species under consideration for U.S. proposals to amend the Appendices lists at the Third Conference of the Parties.

- Proposed Scientific Authority procedural regulations under CITES and Advance notice of proposed findings for export (1980-81 taking season) of bobcat, lynx (*Lynx canadensis*), American ginseng (*Panax quinquefolius*), Alaskan brown bear (*Ursos arctos*), Alaskan gray wolf (*Canis lupus*), and American alligator (*Alligator mississippi-*

piensis.) (Public comment invited on procedural regs, and to be later invited on subsequent notice of proposed export findings, to be published shortly after the advance notice.)

MOU

Finally, a Memorandum of Understanding has been signed between the recently established International Convention Advisory Commission (ICAC) and the Secretary of the Interior (acting as U.S. Scientific Authority) setting forth certain procedural policies under CITES.

The forthcoming notices (inclusive of preliminary U.S. proposals) will be featured in the July 1980 BULLETIN.

U.S. Proposes Primates, Cacti for Appendix I

The Service has finalized a U.S. proposal to place three primates and seven cacti on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), to further promote the protection of these species from exploitation through international trade (F.R. 5/22/80).

All ten species—the Diana monkey (*Cercopithecus diana*), yellow-tailed woolly monkey (*Lagothrix flavicauda*), mandrill (*Papio* (=Mandrillus) *spinx*), and seven cacti (*Ariocarpus agavoides*, *A. scapharostrus*, *Akete-kium ritteri*, *Echinocereus lindsayi*, *Obregonia denegrii*, *Pelecyphora aselliformis*, and *P. strobiliformis*) were the subjects of a January 4, 1980, notice announcing their consideration for transfer from the less restrictive Appendix II to Appendix I of CITES. (Kindly refer to the February 1980 BULLETIN for details on the status of and threats to these species.)

The subject proposal has been submitted to the Convention Secretariat for consideration by the Party nations through postal procedures provided under CITES.

HABITAT ACQUISITION: Costly but Necessary to the Recovery of Many Endangered Species

By far the greatest threat to the continued existence of wildlife and plants is the destruction of their native habitats. Since the colonists arrived on our shores more than 350 years ago, more than 500 species and subspecies of animals and plants have become extinct in the U.S.—largely the result of industrial, agricultural, residential, and recreational development.

As our population continues to grow, the accelerating competition for remaining undeveloped areas will make these lands even more valuable to humans as well as wildlife. Estimates from the U.S. Environmental Protection Agency indicate that up to 2 million acres will be developed each year in the U.S. between now and the year 2000.

Habitat protection has long been considered the key to the conservation of endangered animals and plants. Much habitat has been acquired and managed in recent years by private conservation organizations, State agencies, and concerned individuals. In still other cases, voluntary cooperative efforts have effectively protected endangered species habitat without the need for outright fee title acquisition.

When no other means is available, and habitat preservation is essential to the survival of an animal or plant, Service recovery plans often call for the Federal acquisition of lands and waters necessary to the conservation of Endangered or Threatened species.

Drafters of the Endangered Species Act of 1973 recognized the critical interrelationship between plants and animals and their environment, and so designed this legislation to provide "a means whereby the ecosystems upon which endangered species depend may be conserved, protected, or restored." As amended in 1978, the 1973 Act now authorizes the use of Land and Water Conservation Funds (established under the Land and Water Conservation Fund Act of 1965 and financed by receipts from Outer Continental Shelf mineral leasing, the tax on outboard motor fuel, and surplus property sales) for habitat acquisition for listed animals as well as plants. Once acquired, all of this habitat is

Fish and Wildlife Service Photo



This habitat in California's Tehachapi Mountains is typical of that recently approved for acquisition to protect areas essential to the California Condor.

protected and maintained as part of the National Wildlife Refuge System.

As of March 1980, 248 National Wildlife Refuges were providing haven for 58 Endangered and Threatened species. While not all of these areas were established specifically for endangered wildlife, nearly 70,220 acres had been acquired for Endangered and Threatened species utilizing \$39,866,608 in Land and Water Conservation Funds (LWCF's) through Fiscal Year 1979. (The first acquisition to benefit two listed plant species and an Endangered insect was recently accom-

plished utilizing nearly \$2 million in LWCFs to acquire 55 acres of California's vulnerable Antioch Dunes—see the April 1980 BULLETIN.)

The overwhelming majority of wildlife and plant habitat is not controlled by Federal or State agencies, making protection of all essential areas by fee purchase an impossibility. Many other avenues for protection—such as through easements, leases, or management agreements—are investigated before areas are acquired outright. Unfortunately, often the more valuable

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natural areas are those imminently slated for development—and therefore the most expensive to acquire due to these competing interests. With the limited funds available, the Service must focus its acquisition planning on only the most crucial needs—and then only after all other habitat preservation alternatives have been explored and exhausted.

Acquisition Criteria

Once a species is listed, Federal acquisition is considered only after a Recovery Plan pinpointing the need to purchase and protect certain areas has been approved by the Director. (In situations where the degree of threat is such that there is little question of the need for land acquisition, an abbreviated or draft Recovery Plan focusing on acquisition is acceptable.)

The final decision as to the appropriateness of land or water acquisition will depend largely on (1) the needs of the species, (2) the area's vulnerability to destruction, and (3) the availability of development, operation, and maintenance funds—once the area becomes a part of the refuge system. (The initial purchase expense is only one concern in deciding what lands the Service can afford. The long-term costs of maintaining land and water areas as a refuge can cut heavily into other Program costs as time goes on.)

The Endangered Species Recovery Priority System is applied in determining the general order in which species will be awarded recovery funds, including those proposed for acquisition. The priorities are (1) species experiencing a high degree of threat over species facing lesser threats; (2) species with high recovery potential over a lower recovery potential; and (3) species over subspecies. Acquisitions benefitting two or more high priority species take precedence over those benefitting only one species. Essential or Critical Habitat areas that are in jeopardy for any reason (for high priority species) will take precedence over acquisitions of areas that are in no danger of being lost.

The Process

The land acquisition planning and implementation process is a complicated one, involving a series of evaluations and approvals which, in total, can take longer than 6 years.

All in all, the entire event—from initial planning stages to actual acquisition—can involve hundreds of discrete steps, with many carried out at a regional level. We will attempt to

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The Land Acquisition Process: Endangered Species



PLANNING

(October 1977)

Listing
(Critical Habitat
designation)

Draft Recovery
Plan

Recovery Plan
Approval

Decision Document:
Ascertainment Reports
EA or EIS
Section 7 consultation

(January)

(October 1979)

Regional Director's
Approval

Program Manager's
recommendations

summarize this lengthy process, as it may be applied to a critically Endangered (fictitious) species, the Schnozzola-billed turkey—see the accompanying flowchart.

Once abundant and widely distributed, the Schnozzola-billed turkey (*Turkus nasallogus*) is now confined to the southern timber swamps of the State of Minnetucky, where lumbering has reduced its habitat to about 500 acres. Former population numbers were substantial, but no more than 100 individuals survive today. This all-but-flightless bird is particularly vulnerable to human intrusion, hopping along the ground and attempting to jump to low-lying branches when disturbed. The turkey's available breeding habitat has been shrinking steadily, and is imminently threatened by the plans of an oil mogul to buy and convert this unique area to a ski resort. [For our purposes, recovery of this Endangered species is a top Service priority.]

• Planning

A recovery team was appointed by the Service to develop a recovery plan especially for the Schnozzola-billed turkey shortly after the species was listed for protection under the Endangered Species Act in October 1977 (at which time its Critical Habitat was also designated). More than a year later, the Schnozzola-Billed Turkey Recovery Plan—calling for the acquisition and protection of remaining Schnozzola habitat—was finalized and approved by the Service Director.

At this point, a number of "decision documents" sufficient in scope and depth to guide acquisition planning are needed for the sake of project review and budgeting. First, regional staffers prepare a decision document addressing biological values, engineering feasibility, realty cost data and other related information necessary to justify the acquisition plan to protect the turkey. All reasonable alternatives to fee title acquisition would also be discussed in this document. If the acquisition will displace persons from their dwellings, or businesses, a preliminary relocation plan will also be developed.

An integral part of the decision document is an Environmental Assessment (and, if necessary, an Environmental Impact Statement) in compliance with the National Environmental Policy Act of 1969 (NEPA). Also, as required under the Endangered Species Act of 1973, an intra-Service "Section 7 consultation" must be undertaken to insure that the acquisition action is not likely to jeopardize the existence of an

Endangered or Threatened species (or its Critical Habitat) in the affected area.

[In accordance with NEPA, the Service notifies the affected State clearinghouses, Congressional delegations, and Federal agencies early in the habitat protection planning stages. There is opportunity for public comment throughout the planning process, with public meetings and/or hearings held on pending acquisition proposals whenever public interest warrants.]

In the case of the Schnozzola-bill, all decision documents are favorably received by the Regional Director in October 1979, who recognizes the critical nature of this acquisition request and forwards the decision document through the Washington Realty Office to the Endangered Species Program Manager for his consideration. Once in hand, the Schnozzola package is again promptly reviewed and an approval memorandum with the decision document is then passed along to the Service's specially-appointed Land Acquisition Committee (LAC) for its review. Once the LAC is assured that all the necessary preparations are in line with Service policy and priorities, it refers the package to the Director, together with any appropriate recommendations.

When the Director approves the acquisition proposal, the project is committed to the Service's "program advice"—necessary to authorize the allocation of funds through the region, should they be made available. At this point, the approved Schnozzola package is referred back to the Regional Director, who must formally request the use of (in this case) Land and Water Conservation Fund monies for the acquisition.

• Budgeting

At this time (around January 1980), we have completed the preliminary steps necessary to effect acquisition. But, unless drastic measures are warranted—in which case we would go directly to Congress with an urgent request that it authorize the emergency reprogramming of acquisition monies—we must go through at least as many steps again before the Schnozzola-billed turkey is assured of habitat protection.

As a next step, the Regional Director will prepare and submit a request for the authorization of LWCF's for Fiscal Year 1982. Once approved by the Endangered Species Program Manager, and then by the LAC, the request is then approved by the Director as part of the composite, priority-

ranked Service request for Land and Water Conservation Fund monies.

The entire list is submitted to the Heritage Conservation and Recreation Service (HCRS), an Interior agency designed to coordinate (among other things) the financing of all Federal acquisition needs (using LWCF's) primarily for recreational purposes. The Schnozzola-bill request—along with all other acquisition needs—is then scrutinized by the Interior Department's Land Planning Group (LPG), and consolidated with all other Interior and U.S. Forest Service requests for LWCF's. HCRS may then re-rank the agency lists using its own priority system, and will return its consolidated list to the respective agencies for their further review. When agreement on a final ranking has been reached, the list is then submitted (around October 1980) to the Office of Management and Budget (OMB) as part of Interior's budget request for FY 1982, and from there is referred to Congress.

• Acquisition

Optimistically speaking, we shall assume that both OMB and Congress agree to the need for protection of Schnozzola-billed turkey habitat through acquisition. The President then signs the bill authorizing the appropriation of LWCF monies for this purpose (sometime in the summer of 1981), and the acquisition process then begins in earnest.

Once approved, HCRS sends the list of authorized projects to Interior agencies, and the amount appropriated is then earmarked in the Fish and Wildlife Service budget. Final appraisals are next conducted by the regional realty staff, and negotiations with landowners may then be initiated.

In FY 1982, purchase of tracts from owners of the approved area can begin, with acquisition of contiguous refuge units slated for completion generally within 3 years. When specific tracts present problems, or all reasonable attempts to negotiate purchase with landowners fail, the Service may then initiate condemnation proceedings. (This last-resort measure is undertaken only after all other efforts to protect the area have proven futile.)

Now that his habitat is secured, the Schnozzola-bill can at long last look forward to living out his years on the Service's Schnozzola-Billed Turkey National Wildlife Refuge.

Acquisition nears Completion for Mississippi Sandhills

As one can see, the process of preserving essential habitat—even for

the highest priority species—can be painstakingly long. As a case in point, our Service is now in the final phase of acquiring some 1,600 acres toward completion of the Mississippi Sandhill Crane National Wildlife Refuge for which funds were first allocated in 1976. Situated in Jackson County, protection of this entire area—designated as Critical Habitat for the crane under an emergency ruling in June 1975 and later finalized (with a somewhat smaller area delineated) on August 8, 1977—is absolutely vital to the survival of this subspecies.

Numbering only 40 in the wild, the Mississippi sandhill crane (*Grus canadensis pulla*) was the subject of the first case involving an Endangered species to reach the U.S. Supreme Court. Late in 1976, the high court ruled in favor of halting construction of an interchange on Interstate Highway 10, destined to destroy the primary range of the remaining cranes. (At that time, Mississippi's Governor Clifford Finch recommended Service acquisition of the nearly 2,000 acres in the area of the proposed interchange to insure protection of the land from developer's interests.)

Much of this essential habitat was bought from a prospective developer, and is today being managed to restore and maintain the crane's nesting, feeding, and roosting habitat.

Crystal River, Key Largo among Recent Approvals

In recent months, the Director has given the "go-ahead" for major Service acquisitions in Florida, and in several other areas, destined to protect critically Endangered species.

Nine small islands in King's Bay, the headwaters of Crystal River on Flori-

da's west coast, were the subject of an acquisition proposal approved in January 1980 to protect the West Indian (Florida) manatee (*Trichechus manatus*). Designated as Critical Habitat for the manatee on August 11, 1977, Crystal River is the major wintering area for nearly 100 of the marine mammals—or about 10 percent of the surviving population—where they are attracted to warm-water springs that shelter the animals from lethal winter temperatures.

Boat traffic and disturbance by skin and scuba divers are serious threats to the manatee in this area, which has also been designated for special protection during winter months under Federal and State regulations (see the January 1980 BULLETIN). Acquisition of the approximately 50-acre area is considered the only recourse to preclude continued development of the King's Bay islands, which will increase boat traffic and other water activities that could prove disastrous to the wintering manatee population.

Although the estimated \$400,000 needed to purchase the islands has not been made available through the budget process, The Nature Conservancy is now negotiating purchase of the islands in an attempt to protect the area before turning it over to our Service for establishment of the Crystal River National Wildlife Refuge when funds can be allocated. (See accompanying article on the Conservancy's habitat protection efforts.)

Key Largo—an island of mangroves, open water, and highly threatened uplands off the southeastern tip of Florida—is home to one of the largest populations of American crocodiles (*Crocodylus acutus*) in existence in the U.S. today. Designated as Critical Habitat on August 11, 1977, the southwestern side of North Key Largo contains prime nesting and feeding areas

for the Endangered reptile. At least 25 adult crocodiles are thought to be present within this area, with seven active nests identified in 1978. (Commercial and residential development as well as municipal uses such as dumps and landfills are serious threats to remaining crocodile habitat.)

The acquisition of about 7,100 acres of mangrove swamps and adjacent areas sufficient to allow for the reasonable expansion of the crocodile—and to protect several other listed species occurring in the area—was approved by the Director in April 1980 at a projected (1981) cost of \$9 million. Members of the Service-appointed recovery team for the crocodile believe Federal ownership of this habitat (allowing control of public access to and through the mangroves) is the only hope for protecting this vulnerable species, which is known to have little tolerance of human activity.

Acting to avert certain jeopardy to the species, The Nature Conservancy recently purchased (for eventual resale to the Service) 18 acres of upland buffer property adjacent to important nesting habitat that was imminently threatened.

Once established, the Crocodile Lake National Wildlife Refuge will provide protection for up to one-quarter of the entire remaining population of American crocodiles—now estimated at between 100-400 individuals.

While most habitats for Endangered and Threatened species are acquired (utilizing Land and Water Conservation Funds) under authority of the Endangered Species Act of 1973, several other Federal laws authorize the use of federally-appropriated monies for habitat protection purposes. (They include the Fish and Wildlife Act of 1965, the Migratory Bird Treaty Act of 1918,

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Kings Bay of Crystal River is shown with numbered islands approved for acquisition. Water area behind Islands 2, 3, 4, 5, and 6 is the major manatee concentration area.

and the Refuge Recreation Act of 1962.)

Although not specifically authorized under the Endangered Species Act, the acquisition of nearly 4,000 acres of forest in Klamath County, Oregon (approved by the Director in April 1980) will provide protection to the bald eagle (*Haliaeetus leucocephalus*), listed as Threatened in this State. Together with 240 acres of timberland already acquired (through condemnation) to forestall logging of the area's ponderosa pines (see the July 1978 BULLETIN), eventual completion of the Bear Valley National Wildlife Refuge will one day secure this largest known roosting habitat for the species in the lower 48 States.

Other proposals recently approved for future Service acquisition include:

- **California condor** (*Gymnogyps californianus*)—1,700 acres in Tulare County, California, known to provide roosting habitat (and within the designated Critical Habitat) for this critically Endangered bird were approved in December 1979 for acquisition to protect the area from recreational development.
- **Watercress darter** (*Etheostoma nuchale*)—Two Alabama springs essential to the survival of this Endangered fish—with a declining population estimated at less than 500 individuals—have been earmarked for acquisition upon the Director's December 1979 approval to protect them from continued habitat degradation. (The Atlanta Regional Office reports that options have been secured on 7 acres of land containing one spring in Bessemer, Alabama.) A third spring may receive protection through a cooperative management agreement.
- **Brown pelican** (*Pelecanus occidentalis*)—Six of the North Rock-Shell Castle Islands and about 30 acres of Beacon Island in North Carolina's Pamlico Sound were approved in April 1980 for acquisition to protect the Endangered pelican's northernmost nesting habitat. Owners of the island group (exclusive of Beacon Island) apparently wish to donate their land to The Nature Conservancy—eventually to be a part of the Service's Cedar Island National Wildlife Refuge—to insure protection of these natural areas.

We will attempt to highlight future acquisition approvals as we learn of them in forthcoming issues of the *Bulletin*.

THE NATURE CONSERVANCY

By Anne M. Byers

The primary and most pervasive cause of disappearing plants and animals is habitat disruption and destruction. The Nature Conservancy, a publicly supported national, nonprofit conservation organization, recognizes that only by protecting remaining habitats can we hope to save rare and dwindling species from total eradication. The organization is devoted to preserving ecologically and environmentally significant natural lands, giving first priority to those areas that safeguard endangered, threatened, and rare plant and animal species. Its activities are made possible through contributions, foundation grants, membership dues, and recovery of expenses.

Since preserving its first area in 1953, the Conservancy has saved over 1.6 million acres of prairies, wetlands, islands, forests, and deserts in all 50 States, Canada, Latin America, and the Caribbean. The organization works in three ways. First, it *identifies* the lands that contain the best examples of all the components of the natural world, finding out what is rare and where it exists. Identification is accomplished through natural heritage programs, which are usually undertaken in cooperation with State governments. The inventory of a heritage program provides a continuing process for ascertaining the outstanding and vital natural areas in a State or region. By using the information collected and classified by a heritage inventory, land protection priorities can be set and unique environmental elements—such as rare ecosystems and species' habitats—can be protected *before* they are further imperiled. Since 1974, the Conservancy has established 23 natural heritage programs—22 with States, and another with the Tennessee Valley Authority. Of these numbers, half the programs have been fully transferred, as intended, to State governments. Results of

State natural heritage programs are exemplified by the programs in South Carolina and Ohio, where the heritage inventories have rediscovered scored of plant species previously thought to have been extirpated.

The Conservancy then *protects* natural areas, usually through direct acquisition, either by purchasing land or by accepting donations of land from both individuals and corporations. Protection is also accomplished by assisting State and government agencies and other conservation groups to preserve natural areas. Finally, by using volunteer land stewards and professional staff, the Conservancy *manages* over 670 of its own sanctuaries. To date, The Nature Conservancy has established or helped to establish over 140 preserves harboring federally Endangered or Threatened species. Descriptions of several of these areas and their inhabitants follow.

Manatee: Although currently protected by the Federal Marine Mammal Protection Act of 1972, the 1973 Endangered Species Act, and more recently by the Florida Manatee Sanctuary Act of 1978, the gentle West Indian (Florida) manatee (*Trichechus manatus*) remains on the verge of extinction in Florida, where its numbers have dwindled to somewhere between 600 and 1,000 scattered individuals. It is particularly vulnerable to human activities—manatee deaths and injuries are most often caused by the propellers of speeding power boats. While the Service has finalized regulations for establishing special protection areas for the Endangered marine mammal, The Nature Conservancy has acquired or assisted other agencies in acquiring land for some nine areas known to harbor manatees. These refuges include Rookery Bay, Manatee Springs State Park, Jack Island, Osborn Sanctuary, Blowing Rocks, and Shired Island, lying at the mouth of the Suwannee River. Another tract of 490 acres on Jupi-

ter Island, which was donated to the Conservancy by the Hobe Sound Company in 1976, was transferred to the Fish and Wildlife Service for inclusion in the Hobe Sound National Wildlife Refuge.

Plymouth red-bellied turtle: It is believed that less than 200 of the large Plymouth red-bellied turtles (*Chrysemys rubriventris banasi*) remain, their extreme rarity attributed to draining or polluting of their bogs and ponds and to vandalism. The known range of the turtle, which requires large bodies of fresh water for nesting and wintering, consists of only 11 ponds in Plymouth County, Massachusetts. All 11 have been declared Critical Habitat. In 1978 the Conservancy succeeded in saving a 183-acre area that includes two of the ponds and also provides a protective buffer. In an earlier research effort at the site, approximately 10 red-bellied turtles were caught, marked, and released.

Dwarf trillium: Recommended for listing as an endangered or threatened species, the dainty dwarf trillium (*Trillium pusillum*) was discovered by a Vanderbilt University botany student in Taylor Hollow, the only known location in Tennessee for the rare plant. The hollow is also the only home of a sedge, *Carex purpurifera*, and a synandra, *Synandra hispidula*—both "candidates" for the Endangered species list. Like the trillium, both plants are classified by the Smithsonian Institution as nationally threatened. According to botanists, Taylor Hollow is a rare undisturbed remnant of a mixed mesophytic forest that once covered thousands of acres in the region. The Conservancy acquired the 173-acre property in 1978 and manages it in cooperation with Vanderbilt University.

Florida panther: In recent years, population counts for the Florida panther (*Felis concolor coryi*) have ranged from 50 to 300. However, since most reported sightings come from a variety of sources, the Service's Florida Panther Recovery Team believes that these numbers may be vastly overestimated. The Nature Conservancy recently purchased a unique ecological area where well-documented cougar sightings suggest that the elusive feline may actually maintain a breeding population within the site's parameters. Called Banks Lake, the land encompasses the largest freshwater lake-swamp complex on the coastal plains of Georgia—3,540 acres. A proposed National Natural

Landmark, Banks Lake is currently leased to the Service.

Mississippi sandhill crane: In 1972 the Service authorized a refuge in Jackson County, Mississippi, for the Endangered Mississippi sandhill crane (*Grus canadensis pulla*), a long-legged, 3½-foot-tall bird with gray plumage and a red crown. Unlike others in the crane family, the Mississippi sandhill does not migrate, so it cannot find suitable habitat along an extended flyway. The Conservancy sowed the seeds for the planned refuge in 1974 by purchasing 1,700 acres within the crane's habitat. Since then the organization has obtained 6,522 more acres for eventual transfer to the Service as part of the Mississippi Sandhill Crane National Wildlife Refuge (see accompanying feature).



Dakota skipper butterfly: A Conservancy-owned preserve in Minnesota, Hole-in-the-Mountain Prairie presently contains 222 acres and harbors three rare butterflies—the pawnee skipper, the ottoe skipper, and the Dakota Skipper. The Dakota skipper butterfly (*Hesperia dacotae*), which has declined as the virgin tallgrass prairies have disappeared, is a candidate for listing as a federally Threatened species.

Sea Otter: Hunted almost to extinction for its pelt, the southern sea otter (*Enhydra lutris neris*) num-

bered only 60 individuals in 1914. Now protected from hunting under the Marine Mammal Protection Act and federally listed as a Threatened species, the sea otter has made a substantial comeback: a population of between 1,000 and 2,000 animals exists off the coast of northern California. Landels Hill-Big Creek on the Big Sur coast is a 4,000-acre Conservancy sanctuary that includes a four-mile stretch of coastline where the protected sea otters float just offshore. Big Creek also encompasses a pristine watershed, two perennial streams, natural springs, virgin Redwoods, and 32 distinct biological habitats.

American Crocodile: The Nature Conservancy has already purchased the first tract of land toward establishment of the Service's Crocodile Lake National Wildlife Refuge, a recently authorized 6,000-acre sanctuary for America's Endangered crocodile. While the alligator is prospering, its salt-water cousin, the American crocodile (*Crocodylus acutus*), is barely surviving. Only about two dozen nesting females are left. The results of three different, though coordinated, research projects—one by the National Park Service, another by the Florida State Game and Freshwater Fish Commission, and a third by the Florida Power and Light Company—show that the rare crocodilian can only be helped by protecting and managing its remaining habitat in the Keys and Florida Bay.

Indiana and gray bats: Hibernating and nursery roosts required by the Indiana bat (*Myotis sodalis*) and the gray bat (*Myotis grisescens*) have become so scarce that entire populations of both species have disappeared from certain previously used caves. It has been estimated that 90 to 95 percent of the total hibernating gray bat population, about 2 million, is now restricted to only five caves. Only 13 caves harbor about the same percentage of Indiana bats. The two Endangered mammals suffer, first, from human activities in and around vital caves, and secondly, from the use of pesticides. The Nature Conservancy has preserved four properties, two in Illinois, one in Ohio, and another in Oklahoma, that contain caves used by hibernating or nursing colonies of gray and Indiana bats.

(Bionote: Anne M. Byers is Associate Editor of The Nature Conservancy News, as well as the Conservancy's Staff Writer. We are grateful for her contribution to the BULLETIN.)

RULEMAKING ACTIONS

May 1980

CRITICAL HABITAT REPROPOSED FOR TWO TEXAS FISHES

The Service proposes to designate Critical Habitat for two species of fish—the Devil's River minnow (*Dionda diaboli*) and the Leon Springs pupfish (*Cyprinodon bovinus*)—vulnerable to habitat destruction within their remaining range (F.R. 5/16/80).

The minnow and pupfish were respectively proposed for listing as Threatened and Endangered, with Critical Habitat, on August 15, 1978. However, the Critical Habitat portions of the listing proposals were withdrawn on March 6, 1979, subsequent to procedural changes under 1978 amendments to the Endangered Species Act of 1973.

Devil's River minnow

Historically known from the Devil's River, San Felipe Creek, and Las Moras Creek in Val Verde and Kinney Counties, the Devil's River minnow is now restricted to remaining free-flowing portions of its original habitat due to modifications for flood control, agricultural, and recreational purposes. (The species is no longer known from Las Moras Creek.)

The minnow population in the lower portion of Devil's River was eliminated following the construction of Amistad Reservoir in 1968, while the population at the headwaters of Devil's River was extirpated as the result of groundwater removal.

The surviving population of Devil's River minnow in San Felipe is now threatened by the implementation of Federally sponsored flood control measures (potentially calling for Section 7 Consultation under the 1973 Act). Any future excessive groundwater pumping or surface diversion could also threaten remaining numbers by limiting flows in the Devil's River.

Leon Springs pupfish

Although originally known from Leon Springs west of Fort Stockton, Texas, the Leon Springs pupfish disappeared from this locality prior to 1938 (due to

the damming, diversion, and poisoning of the spring), and was thought extinct. A separate population was rediscovered in Diamond Y Spring (and its outflow into Leon Creek) north of Fort Stockton in 1965, and appears in fairly good condition.

This remaining pupfish population is threatened by potentially devastating spills from nearby oil refineries, diminishing stream flows through excessive groundwater removal, and the introduction of harmful exotic fishes. (The release of sheepshead minnows (*Cyprinodon variegatus*) into Leon Creek in 1974 resulted in widespread hybridization with the closely-related *C. bovinus*, threatening the genetic purity of the pupfish. All of the sheepshead minnows have since been removed, although the pupfish habitat remains accessible and vulnerable to the release of exotics.)

Diamond Y Spring and its outflow,

Leon Creek, in Pecos County are included in the proposed Critical Habitat determination.

Public Meetings/Comments Solicited

The public was invited to attend public meetings on the subject proposals on June 12 and 13, 1980. (Advance notice was provided in the May 1980 BULLETIN.)

The Service has drafted an impact analysis, and believes at this time that economic and other impacts of this proposed action are non-significant (under provisions of the 1978 Amendments and other applicable Federal laws). Upon completion, a final impact analysis will serve as the basis for a determination as to whether exclusion of any area from Critical Habitat designation is warranted (for economic or other reasons).

Comments, as well as biological and economic data, in response to these proposals should be submitted by July 15, 1980, to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

SERVICE REVIEWS ANTIOCH INSECTS

The Service is reviewing the status of nine insect species known from the Antioch Dunes in Contra Costa County, California. They are: Middlekauff's katydid (*Idiostatus middlekauffi*), Antioch weevil (*Dysticheus rotundicollis*), Antioch robber fly (*Cophura hurdi*), Valley mydas fly (*Raphiomydas trochilus*), Antioch vespid wasp (*Leptochilus areniculus*), Antioch tiphiid wasp (*Myrmosa pacifica*), Antioch sphecid wasp (*Philanthus nasalis*), Antioch andrenid bee (*Perdita scitula antiochensis*), and the yellow-banded andrenid bee (*Perdita hirticeps luteocincta*).

The Antioch Dunes ecosystem, which supports or formerly supported these nine species, has been almost completely destroyed by industrialization. [The Service recently acquired more than 55 acres of this ecosystem to protect three native Endangered species: Lange's metalmark butterfly (*Apodemia mormo langei*), Antioch

Dunes evening-primrose (*Oenothera deltoides* ssp. *howellii*), and Contra Costa wallflower (*Erysimum capitatum* var. *angustatum*). See the April 1980 BULLETIN.] The Antioch robber fly and vespid wasp are last known to have been collected in 1939; the Antioch weevil, tiphiid wasp, and sphecid wasp in the 1950's; the Middlekauff's katydid in 1965; the Valley mydas fly in 1974; and the Antioch and yellow-banded andrenid bees in 1977. Two species of insects found only at Antioch Dunes are believed to be already extinct. The Antioch katydid (*Nebuda extincta*) is known from a single specimen collected in 1937. Despite searches, no other specimens of this species or of the Antioch anthicid beetle (*Anthicus antiochensis*), which was last collected in 1953, have been obtained.

Interested parties may submit factual information on these species to the Office of Endangered Species, U.S. Fish and Wildlife Service, Washington, D.C. 20240, by September 1, 1980.

Coachella Valley Lizard

Continued from page 1

Status and Threats

Although the lizard is historically known from a 324-square mile area in Riverside County, habitat destruction resulting from urban and agricultural growth has restricted the species' range to approximately 200 square miles, of which less than 100 now provide suitable habitat. Since 1940, the human population of Coachella Valley has grown from 12,000 to over 100,000, and is projected to reach more than 150,000 by 1990. None of the lizard's habitat in the valley has been permanently preserved, and a review of current zoning plans indicates that all of its remaining range could eventually be developed.

The species has also been threatened by increasing off-road vehicle use—an activity that has been shown to significantly affect the density and biomass of lizard populations. Additionally, sand deposits in the area are being invaded by dense stands of Russian thistle (*Salsola iberica*), an introduced noxious weed, and the lizard's habitat has been further altered by the planting of Tamarisk trees (*Tamarix aphylla*)—collectively used as wind breaks to protect developed areas.

Several activities involving Federal agencies (and potentially calling for consultation with our Service as required under Section 7 of the Endangered Species Act) are presently known which may have an impact on the Coachella Valley fringe-toed lizard.

Proposed Area

The area proposed for determination as Critical Habitat includes approximately 11,920 acres (18 5/8 square miles) of privately owned land in Riverside County, bounded by Washington Street, Hidden Palms, and Thousand Palms Oasis and Canyon. Included in the area are wind-blown sand deposits that provide adequate shelter for the lizards as well as suitable habitat for their feeding, nesting, and hibernation.

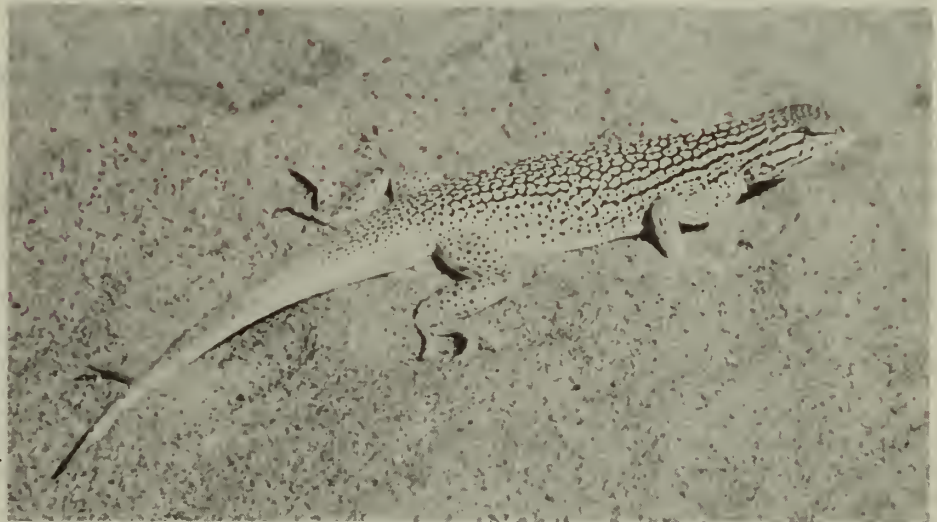
The Service has drafted an impact analysis, and believes at this time that economic and other impacts of this proposed action are not significant (under provisions of the 1978 Amendments and other applicable Federal laws). Upon completion, a final impact analysis will serve as the basis for a determination as to whether exclusion of any area from Critical Habitat designation is warranted (for economic or other reasons).

Photo by C. Kenneth Dodd, Jr.



Critical Habitat for the Coachella Valley fringe-toed lizard comprises approximately 11,920 acres in Riverside County, California. Clumps of Russian thistle, covering the area pictured above, may be having a detrimental impact on the blow-sand habitat of the lizard.

Photo by Wilbur W. Mayhew



Tiny projections on the toes of the 4- to 5-inch long Coachella Valley fringe-toed lizard—a desert reptile evolutionarily related to Colorado and Mojave fringe-toed lizards—allow it to run easily over the sand. The lizard's body is flat, reducing wind resistance and enabling it to evade predators by "swimming" beneath the surface of the sand when threatened.

Public Meetings/Comments Solicited

The public was invited to attend a public meeting on the subject proposal on June 20 and a public hearing on July 7, 1980. (Advance notice was provided in the May 1980 BULLETIN.)

Comments, as well as biological and economic data, in response to this proposal should be submitted no later than July 28, 1980, to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

CRITICAL HABITAT REPROPOSED FOR THREE CALIFORNIA BEETLES

Striving to protect the last remaining range of these rare insects from changing land use practices, the Service has proposed the determination of Critical Habitat for the delta green ground beetle (*Elaphrus viridis*), the Mojave rabbitbrush longhorn beetle (*Crossidius mojavensis mojavensis*), and the California elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (F.R. 5/2/80).

All three of the California beetles had been proposed for listing with designation of Critical Habitat on August 10, 1978. However, in line with substantive amendments to the Endangered Species Act, the Critical Habitat portions of these proposals were withdrawn on March 6, 1979. (The subject notices comply with all procedural requirements under the 1978 amendments.)

Mojave rabbitbrush longhorn

Proposed for Endangered classification, the Mojave rabbitbrush longhorn beetle now occurs at only one of five localities where it was previously known. Land-clearing and urbanization within the insect's range in Los Angeles County have accounted for the decline of this species.

Adult beetles feed on the pollen of, and mate on, flowers of composite shrubs. Changing land-use practices which could destroy the species' host plants within its restricted range will continue to threaten the survival of the insect unless its habitat is protected from loss.

California elderberry longhorn

Much of the riparian environment in the lower Sacramento and upper San Joaquin Valleys formerly inhabited by the California elderberry longhorn beetle has been destroyed by stream channelization, levee construction, and development of riverfront properties. Proposed for listing as a Threatened species, this beetle is now known only from the American River near its confluence with the Sacramento River, and from Putah Creek, Sonoma County.

Critical Habitat designation will help to protect areas containing stands of the elderberry, *Sambucus* spp., the plants upon which the beetle feeds and lays its eggs. Any alteration of riverside habitat that could destroy the

species' host plant would threaten the survival of the insect.

This reproposal contains two areas not included in the initial Critical Habitat proposal where two of the largest known colonies of the species occur. (Most of the land contained in the Critical Habitat proposal is owned by the County of Sacramento, which has indicated its willingness to protect the beetle and its riparian habitat.)

Delta green ground beetle

Threatened status was proposed for this unique predacious beetle which occurs in vernal pools in Solano County, California. The insect is limited to the grassy edges of only two vernal pools south of Dixon, where it is threatened by potential agricultural conversion, drainage, and pipeline construction.

Recent bulldozing has modified the area around one of the vernal pools, and two projects (a water supply aqueduct and wastewater treatment plant) involving Federal funding and/or authorization are planned that could possibly impact essential habitat areas

(potentially requiring Section 7 consultation under the Endangered Species Act).

Public Meetings/Comments Solicited

The public was invited to attend public meetings on the subject proposals on May 22 and 23, and public hearings on June 12 and 13, 1980. (Advance notice was provided in the April 1980 BULLETIN.)

The Service has drafted an impact analysis, and believes at this time that economic and other impacts of this proposed action are non-significant (under provisions of the 1978 Amendments and other applicable Federal laws). Upon completion, a final impact analysis will serve as the basis for a determination as to whether exclusion of any area from Critical Habitat designation is warranted (for economic impact or other reasons).

Comments, as well as biological and economic data, in response to these proposals should be submitted to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

TWO FISHES UNDER REVIEW

Two fishes, the orangefin madtom (*Noturus gilberti*) and the Roanoke logperch (*Percina rex*), are being reviewed by the Service to determine if they should be proposed as Endangered or Threatened species and if Critical Habitat should be designated. The Service published a notice of review for both species in the March 18, 1975, *Federal Register*, but believes it is now necessary to solicit any new information which has been gathered since then.

The orangefin madtom is thought to be restricted to the upper portion of the Roanoke River system in Virginia and North Carolina and the Craig Creek system in the James River watershed in Virginia. The species' range has been reduced by impoundments, turbidity, sedimentation, sewage, and chemical pollutants—all of which re-

main as threats, especially in the rapidly developing Roanoke-Salem Metropolitan Area.

The Roanoke logperch occurs in four small and widely separate populations in the Virginia section of the Roanoke River system. This species is threatened by pollution and stream alteration. The largest of the four populations, found in the upper Roanoke River mainstream, is subject to industrial pollution, accidental chemical spills, and increases in toxic urban run-off resulting from suburban expansion.

Comments and data should be submitted to the Regional Director, U.S. Fish and Wildlife Service, Department of the Interior, One Gateway Center, Suite 700, Newton Corner, Massachusetts 02158, on or before August 11, 1980.

RAZORBACK SUCKER PROPOSAL WITHDRAWN

In accord with 1978 amendments to the Endangered Species Act, the Service has withdrawn an expired proposal to list as Threatened without Critical Habitat, the razorback sucker (*Xyrauchen texanus*, F.R. 5/27/80). Under the amendments, a final rule to list a species must be published in the *Federal Register* no later than two years after the publication of the notice of the proposed rule. The amended Act also authorized a one-year suspension of all withdrawals until November 10, 1979.

The razorback sucker, known from Arizona, California, Colorado, Nevada, Utah, and Wyoming, was originally proposed on April 24, 1978, along with the bonytail chub (*Gila elegans*), which was listed as Endangered in a final rulemaking on April 23, 1980. The razorback sucker may not be repropoed for listing unless sufficient new information is available to warrant the proposal of a regulation.

THREATENED STATUS, CRITICAL HABITAT PROPOSED FOR MOUNTAIN GOLDEN-HEATHER

The Service proposes to list as Threatened, and to designate Critical Habitat for, mountain golden-heather (*Hudsonia montana*), a rare North Carolina plant (F.R. 5/29/80).

All known specimens of this low perennial shrub occur on or near Table Rock in the Pisgah National Forest, where the plant was first discovered in 1816. Today, *Hudsonia montana* and the fragile plant communities in which it occurs are threatened by human trampling, which has caused recent declines in the numbers of at least two populations.

The U.S. Forest Service is now in the process of developing a monitoring and habitat management plan for the species. While Forest Service regulations prohibit the removal or destruction of Threatened, Endangered, rare, or unique species from its lands, listing of the mountain golden-heather under the Endangered Species Act will offer additional protection to the species.

Photo by E. Laverne Smith



Hudsonia montana, a low perennial shrub with needle-leaves and yellow flowers, is proposed as Threatened with Critical Habitat.

The proposed Critical Habitat includes all known populations of the *Hudsonia montana* in North Carolina, along with adjacent suitable habitat to allow for natural expansion.

H. montana was included in a July 1, 1975, notice of review on the basis of the Smithsonian Report to Congress listing this plant as one of those considered to be endangered, threatened, or extinct. Subsequently, the species was among approximately 1,700 vascular plants proposed for listing as Endangered on June 16, 1976. (This proposal was later withdrawn, as it was not finalized within time limits imposed under 1978 amendments to the Act. While both the notice of review and proposal included this species as *Hudsonia ericoides* ssp. *montana*, recent morphological, cytological, and population studies have confirmed *H. montana* as a distinct species.

Public Meetings/Comments Solicited

The public was invited to attend public meetings on the subject proposal on July 1, 1980 (as announced in the May 1980 BULLETIN).

The Service has drafted an impact analysis, and believes at this time that economic and other impacts of this proposed action are non-significant (under provisions of the 1978 Amendments and other applicable Federal laws). Upon completion, a final impact analysis will serve as the basis for a determination as to whether exclusion of any area from Critical Habitat designation is warranted (for economic or other reasons).

Comments, as well as biological and economic data, in response to these proposals should be submitted by July 28, 1980, to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

Rulemaking Actions

ENDANGERED AND THREATENED SPECIES LISTS REPUBLISHED

The Service has issued a republication of the lists of Endangered and Threatened Wildlife and Plants, inclusive of all species listed as of May 10, 1980 (F.R. 5/20/80). Technical errors from the last republication (January 17, 1979) have been corrected and the lists have also been restructured.

A column has been added to indicate whether or not Critical Habitat has been designated for the species. Another column that has been added to the lists of wildlife and plants is "Historic Range," which replaces the old "Known Distribution." This column indicates, for informational purposes, the general known distribution of the species or subspecies as reported in the scientific literature. A column headed "Vertebrate Population where Endangered or Threatened" has been added to the wildlife list only, because populations of invertebrates and plants may not be listed under the Act. (For a discussion of the regulations governing listing of species and the new format of the U.S. Lists, see the March 1980 BULLETIN.)

Comments concerning this republication should be sent to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240. (Copies are also available, in limited supply, from the Service's Office of Publications at the same address.)

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	35	251	286	3	21	24
Birds	67	145	212	3		3
Reptiles	12	55	67	10		10
Amphibians	5	9	14	2		2
Fishes	31	11	42	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	3		2
Plants	49		49	7	2	9
Total	231	474	705	45	23	68

Number of species currently proposed: 35 animals
(1 plant)

Number of Critical Habitats listed: 36

Number of Recovery Teams appointed: 68

Number of Recovery Plans approved: 36

Number of Cooperative Agreements signed with States:
36 (fish & wildlife)
4 (plants)

May 31, 1980

NEW PUBLICATIONS

The California Native Plant Society has come out with an *Inventory of Rare and Endangered Vascular Plants of California*, Special Publication No. 1 (2nd Edition). Over 1,300 plants are listed in this book. The cost is \$7.50 plus tax for California residents. Write to the California Native Plant Society at 2380 Ellsworth, Suite D, Berkeley, California 94704.

Free copies of *The Rare Vascular Plants of Manitoba* are available from

The Rare and Endangered Plants Project, Botany Division, National Museum of Natural Sciences, Ottawa, K1A 0M8. Copies of the previously published lists for Ontario, Alberta, Nova Scotia, and Saskatchewan are also available.

The Brown Pelican (Pelecanus occidentalis): A Bibliography is available, for \$3.00 prepaid, by writing to R.W. Schreiber, Natural History Museum, 900 Exposition Blvd., Los Angeles, California 90007. This reference contains over 900 citations.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

Commercial Importation under Consideration for Three Threatened Kangaroos

Subsequent to a "5-year" review of the status of the red, eastern gray, and western gray kangaroos, the Service has proposed to permit commercial importation of the products of these animals from their native habitat in Australia for a trial period of two years (F.R. 6/16/80).

Background

All three species of kangaroos involved in the subject proposal were

listed as Threatened under the Endangered Species Act of 1973 on December 30, 1974, subsequent to an earlier notice proposing all three for listing as Endangered (F.R. 4/1/74).

Under the initial proposal, the Service believed that the status of the red kangaroo (*Megaleia rula*), the eastern gray kangaroo (*Macropus giganteus*), and the western gray kangaroo (*Macropus fuliginosus*), and threats to their continued existence warranted the highly

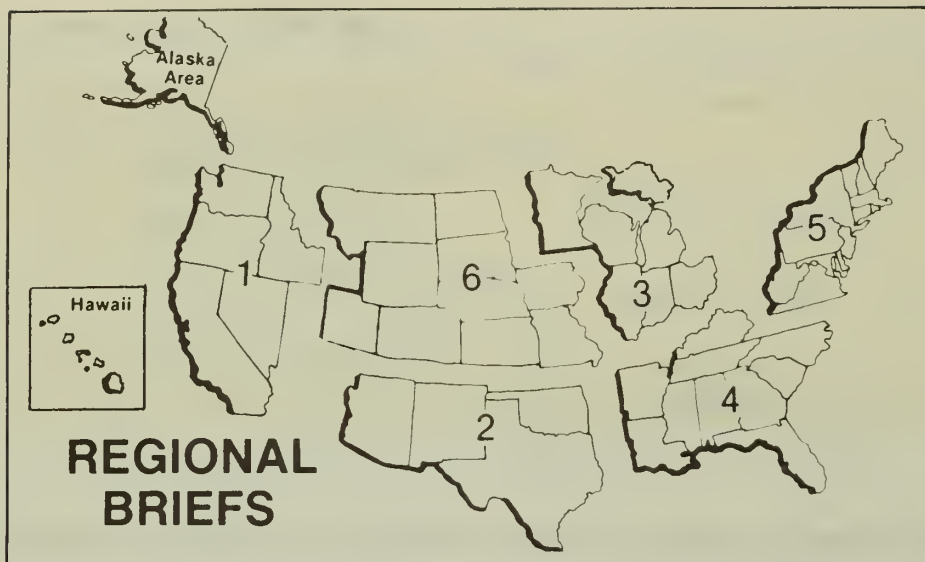
protective Endangered classification. Upon the receipt of data and comments subsequent to its listing proposal, however, the Service determined that mortality factors (such as poaching, commercial and sport hunting, and excessive drought) were apparently not so substantial as to lead to the extinction of the three marsupials, and habitat losses were not as significant as once thought in light of the total range of the

Continued on page 11



Photo courtesy of Lothar Schlawe

If adopted, the Service proposal would allow for regulated import of kangaroo parts and products into the U.S. for a 2-year trial period.



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of June.

Region 1. Area Office boundaries will be realigned beginning October 1, 1980. The Sacramento Area Office will cover California, Boise will be responsible for Idaho and Nevada, the Olympia

office will have Washington and Oregon, and the Honolulu Area Office will cover Hawaii and the Pacific Islands, as it did previously.

A new population of *Mirabilis mactarlanei* has been found in Idaho's Salmon River drainage. This new population more than doubles the number of plants

from the three previously known populations.

Region 2. Jack Woody participated in a panel discussion conducted by the Southwestern Audubon Society. Representatives of the National Audubon Society and the New Mexico Department of Fish and Game met to discuss the ongoing Grays Lake program of establishing a new migratory flock of whooping cranes (*Grus americana*).

The bald eagle (*Haliaeetus leucocephalus*) nesting study on the Verde and Salt Rivers in Arizona began in March and has turned up five fledglings. A juvenile tagged last year has also apparently returned to the area.

Region 3. The 1980 census of the Kirtland's warbler (*Dendroica kirtlandii*) population in Michigan was up 30 pairs from last year's census. The inventory found 242 pairs in the six-county survey. The goal of recovery efforts for this species is a population of 1,000 pairs. A recent fire in the warbler's nesting habitat (see June 1980 BULLETIN) did not affect the population. The birds simply left the area for other sites.

U.S. Fish and Wildlife Service Washington, D.C. 20240

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Alaska Area:** Alaska.

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Region 2, P.O. Box 1306, Albuquerque, NM 87103 (505-766-2321): Jerry Stegman, Acting Regional Director; Robert F. Stephens, Assistant Regional Director; Jack B. Woody, Endangered Species Specialist.

Region 3, Federal Bldg., Fort Snelling, Twin Cities, MN 55111 (612-725-3500); Harvey Nelson, Regional Director; Daniel H. Bumgarner, Assistant Regional Director; James M. Engel, Endangered Species Specialist.

Region 4, Richard B. Russell Federal Bldg., 75 Spring St., S.W., Atlanta, GA 30303 (404-221-3583); Kenneth E. Black, Regional Director; Harold W. Benson, Assistant Regional Director; Alex B. Montgomery, Endangered Species Specialist.

Region 5, Suite 700, One Gateway Center, Newton Corner MA 02158 (617-965-5100); Howard Larsen, Regional Director; Gordon T. Nightingale, Assistant Regional Director; Paul Nickerson, Endangered Species Specialist.

Region 6, P.O. Box 25486, Denver Federal Center, Denver CO 80225 (303-234-2209); Don W. Minnich, Regional Director; Charles E. Lane, Assistant Regional Director; Don Rodgers, Endangered Species Specialist.

Alaska Area, 1101 E. Tudor Rd., Anchorage, AK 99503 (907-276-3800, ext. 495); Keith M. Schreiner, Area Director; Jon Nelson, Ass't Area Director; Dan Benfield, Endangered Species Specialist.

Region 5. Service personnel met with the U.S. Forest Service, Appalachian Mountain Club, and University of New Hampshire representatives to discuss the Critical Habitat designation of Robbins' cinquefoil (*Potentilla Robbinsiana*) and the relocation of segments of the Appalachian Trail. All parties agreed to the proposed route of the new trail which should help reduce the human impact on the existing population of the plant.

A U.S. Fish and Wildlife Service Certificate of Appreciation Award was presented to Professor Claude E. Phillips on June 13, 1980 at the Delaware Natural History Society banquet held in honor of his 80th birthday. Professor Phillips is recognized as the leading authority on the flora of the Delmarva Peninsula.

Region 6. The Service reports that humpback chubs (*Gila cypha*) captured from the Colorado River below Grand Junction, Colorado, have spawned successfully. A total of 18,000 eggs taken from wild females were fertilized on location with sperm from wild males. The eggs were air shipped to Willow Beach National Fish Hatchery in Arizona, where they were successfully hatched. Also this year, captive humpbacks at Willow Beach successfully spawned.

The Riverside Irrigation District and Public Service Company of Colorado have filed suit against the Service and the Army Corps of Engineers regarding the proposed Wildcat Reservoir on a tributary of the South Platte River. The

plaintiffs have requested \$181 million in damages. The Service issued a biological opinion which indicated that the operation of the reservoir would likely jeopardize the continued existence of

the whooping crane and adversely modify its Critical Habitat in Nebraska. (The cabinet-level Endangered Species Committee later conditionally exempted the "Greyrocks Project" from compli-

ance with Section 7 of the Endangered Species Act—see the December 1978 and January 1979 BULLETINS.) Jurisdiction for the case has not been determined.

DEATH OF CALIFORNIA CONDOR CHICK UNDER INVESTIGATION

The Service has announced the results of an autopsy on the California condor chick that died during examination by a biologist on June 30, indicating the cause of death as "shock and acute heart failure." According to Service officials, the heart failure resulted in excess fluid in the lungs, depriving the

bird of adequate oxygen.

The San Diego Zoo's autopsy report said that moderate obesity—apparently common in wild baby chicks while they are still in the nest—could have contributed to the chick's death. Separate analyses were also conducted by the Service's Patuxent Wildlife Research Center, indicating only trace amounts of environmental contaminants in the

bird.

The Service is conducting a thorough review of the circumstances surrounding the condor's death, and will await these findings (along with the results of experiments with Andean condors and other vultures in South Africa and Peru) before reapplying for permits necessary to continue work as part of the California condor recovery program.



U.S. Fish & Wildlife Service Photo

This 45-day old California condor was successfully examined prior to the older chick, which failed to survive the ordeal.

EAGLES ON THE UPSWING IN THE CHESAPEAKE

Our national symbol is holding its own here in the vicinity of the Nation's capitol, where the productivity of the bald eagle (*Haliaeetus leucocephalus*) is up again this year in the Chesapeake Bay.

A record total of 72 eagles fledged this spring from 49 successful nests in Maryland, Virginia, and Delaware—actually exceeding the previous known high of 1936, when 71 eagles were hatched in 35 nests in the Bay area.

The 1980 tallies are especially significant for Virginia, where an unprece-

dent 35 chicks were produced from 23 nests within the study area—possibly a sign that the birds are on the rebound from declines in the 1960's likely due to environmental contamination.

Tri-State Banding Project

Almost all of the active nests were visited and climbed to by members of the Chesapeake Bay Bald Eagle Banding Team, a project of the National Wildlife Federation's Raptor Information Center (RIC), organized in 1977 to assess the

status, life history, productivity, and problems of nesting bald eagles in the Bay area. Banding efforts and associated studies are sponsored by the Maryland, Virginia, and Delaware wildlife agencies, with 3-to-1 matching fund assistance from the Service through the Federal endangered species grant-in-aid program. (See our feature in the August 1977 BULLETIN.)

The RIC team began 1980 field work around May 1, visiting almost all 85 active eagle nests (and scaling 45 of the 49 successful nest trees) to band young birds and collect data important to the study effort. By mid-June, U.S. Fish and Wildlife Service bands and special triple thickness color vinyl tags had been placed on 63 eaglets (30 in Maryland, 31 in Virginia, and 2 in Delaware), promoting their visual identification throughout the Bay area. (Four of the successful nests could not be visited when landowners failed to permit entry onto their properties, while another three chicks were approaching fledging and deemed too old to attempt banding.)

With an overall nest success rate of 58 percent, productivity is up this year to an encouraging .85 young per active nest, compared with .71 in 1979, .65 in 1978, and .82 in 1977 (the first year of the banding project, when 63 eaglets were fledged in and around the Chesapeake).

While this year's productivity in the Chesapeake was true to "Mother Nature," Virginia's eagle population had been bolstered by human hands during the past 3 years of the banding project. In cooperation with the Service's Patuxent Wildlife Research Center in Laurel, Maryland, two captive-produced eggs were placed in a previously unproductive nest near the Mason Neck National Wildlife Refuge in 1977. One hatched, and the eaglet successfully fledged (although transplant efforts the following year proved unsuccessful). Two additional eaglets born in captivity at the Patuxent Center were successfully introduced to a Virginia nest in 1978, with another three chicks adopted at two Virginia nests in 1979. (See our feature on Virginia's endangered species activities in the February 1979 BULLETIN.)

Since the project's inception, co-operators have learned a great deal about the life history of Chesapeake Bay bald eagles—all of which should better equip them to protect essential nesting habitat, determine probable

Photo by Craig Kopple



This year's Chesapeake Bay eaglets have been fitted with orange vinyl triangular tags with symbols denoting different nest locations.



Bander Keith Cline is about to fit this young eagle with a radio transmitter, so that specialists may track its movements after fledging. (Designed to signal whether the bird is moving or inactive, the unit amounts to no more than 2 percent of the eagle's body weight.)

Photo courtesy of the Raptor Information Center

sources of contamination and disturbance that may inhibit reproduction, and learn the migratory habits of the eaglets once they have fledged.

For example, we know that the loblolly pine (with trees approaching 100 feet in height) is the eagle's favorite nest tree in the Chesapeake. A surprising array of prey items has been found in and around eagle nests, including the remains of turtles (especially diamond-backs), eels, a variety of fish species, muskrat and other small mammals (last year accounting for the loss of a do-

mestic cat), various waterfowl and even raptors (with evidence of a red-tailed hawk, merlin, and great-horned owl found in 1979).

Watching the Birds

Under contract to the Virginia Commission of Game and Inland Fisheries (utilizing Federal aid assistance from the Service), Dr. Mitchell Byrd and a graduate student at the College of William and Mary have initiated a monitoring program designed to learn more about the habitat needs, range, and

feeding and nesting habits of bald eagles in the Bay area.

Seven eaglets in nests along the Rappahannock River in Virginia were fitted this year with radio transmitters to better understand their movement patterns upon fledging. David Wallin, who coordinates the project as part of his graduate work at William and Mary, says the information gained from tracking efforts should prove valuable in identifying foraging sites to pinpoint possible sources of contamination.

Continued on page 6

Chesapeake Eagles

Continued from page 5

Results from the 7 birds radio-tagged by Wallin last year (3 near the Potomac, 3 from the Rappahanock, and 1 from the first known nest along the James River since 1973) indicate that the eaglets stay in the vicinity of their nests for about two months after fledging, moving to isolated shore lines where they spend 40 to 70 percent of their time. The biologists were able to follow the birds for some two and a half months before they began to disperse apparently beyond the range of the transmitters. (The use of fixed-wing aircraft with special antennas should prolong monitoring this year.)

Wallin is also studying sibling interactions and feeding activities with the aid of two remote video cameras, placed in trees near two active Virginia nests this year by the banding crew. (There appears to be a fair amount of aggression between the young eagles, with older birds generally more successful in obtaining food items.) The cameras also permit the collection of data on prey items, the frequency of food deliveries, weather conditions, and other factors that could affect nesting success.

Pesticide Analyses

For the past 4 years, RIC climbers have not only banded chicks but have also visited abandoned eagle nests throughout the Bay, collecting eggs and eggshell fragments for analysis at the Service's Patuxent Center. Of the 36 nests found abandoned this year, 35 were visited from which 8 eggs were salvaged along with 10 collections of eggshell fragments.

According to Stanley Wiemeyer, who coordinates eagle egg pesticide analyses for the Center, some breeding eagles in the Chesapeake are still contaminated with fairly excessive levels of chlorinated hydrocarbons like PCBs, dieldrin, and DDE (a breakdown product of DDT). But, because of the small and biased nature of the samples collected, it is still too early to establish a trend with regard to the impacts of environmental contamination on eagle productivity in the Bay.

Wiemeyer is now in the process of computerizing data on approximately 100 eggs collected between 1971 and 1979 from nests throughout the country in an attempt to determine relationships between contaminant levels, territory productivity, and shell thickness in bald eagles.

Pesticides may not be the only cause of nest failures in the Bay area, unfortunately, as evidence of human disturbance is often linked with nest

abandonment. The researchers have noted population increases in remote or protected areas, while there has been a corresponding decline in breeding pairs where the human population is increasing. A large portion of the Bay's eagle nests occur on private property, possibly leaving them vulnerable to adverse land management practices.

Gary Taylor (Maryland Department of

Natural Resources), leader of the Service-appointed recovery team for Chesapeake Bay eagles, reports that the recovery plan for this population should be in final draft form by the end of the summer. In the meantime, RIC plans to continue banding efforts through 1981, in the hope that sufficient data may be gathered to help restore the Chesapeake Bay bald eagle.

EAGLE COUNTS UP 30 PERCENT

A second annual mid-winter survey of bald eagles in the lower 48 States sponsored by the National Wildlife Federation in January has produced a preliminary total of 12,199 eagles—some 3,000 more birds than were sighted during the 1979 survey.

Taken during January 2-20 by some 2,900 counters representing 47 State, 7 Federal, and numerous private organizations, this year's census revealed the highest eagle population in Washington State, with 1,623 sightings. (Runners-up were Missouri, California, Utah, Oregon, Illinois, Colorado, and Oklahoma.)

William S. Clark, director of the Federation's Raptor Information Center, cautions that we should not look to the 30 percent increase as positive evidence that the bald eagle is making a comeback in the U.S. "We attribute the higher count mostly to the fact that our survey was more intensive this year, with more participants, better coordination, and coverage of more area." But Clark believes this year's figures do seem to show that we are not losing ground in our effort to save the bald eagle, with the number of young and immature birds especially encouraging.

Mike Pramstaller, who coordinated the survey effort, explains that "our survey is much more than just a bird count. State and Federal wildlife officials also learn a lot about the movements of wintering eagles and their habitat, so that they may determine which areas should be better protected."

Survey results are available from the Raptor Information Center, National Wildlife Federation, 1412 - 16th Street, N.W., Washington, D.C. 20036.



HACKED EAGLES NEST IN NEW YORK

Endangered species specialists in New York have announced an unexpected victory: Two bald eagles have been hatched in the wild by birds that were themselves reared at a hack site in the State in 1976.

Biologists first noticed the pair of 4-year old birds attempting to establish a home territory and nest earlier this spring, but were unable to confirm the presence of an egg. A ground check

around the 1st of July, however, revealed two eaglets in the nest. Both appear healthy, and are expected to fledge around the end of July.

Peter Nye, coordinator of the State's endangered species program, called the event "truly historic," demonstrating that eagles in the wild in New York can now produce viable eggs with shells strong enough to withstand incubation. "It is a significant step toward our goal

of restoring a breeding population of bald eagles in New York State," Nye said. Until this year, only a single active bald eagle nest remained in New York (from which a transplanted chick was successfully fledged in 1978—see the December 1978 BULLETIN on New York's program).

In the first 4 years of the program, 15 eagles were hacked at the Montezuma National Wildlife Refuge in central New York (where 5 more birds are being reared this season).

Unfortunately, biologists have been unable to band the eaglets because of an active honeybee hive directly under the nest.



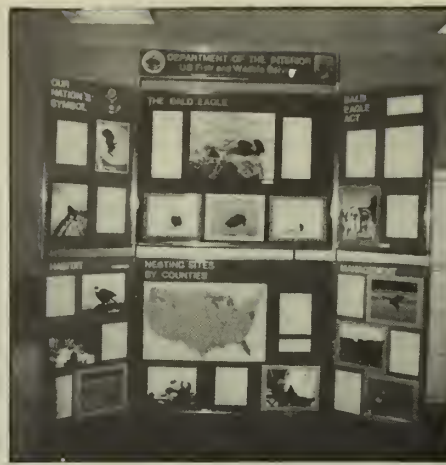
photo by Peter E. Nye

New York biologists were happily surprised to discover these two eaglets, produced by adults that were themselves "hacked" in the wild only 4 years ago. (Prior to this year's creation, only one active bald eagle nest had been known in the State for 15 years.)

Bald Eagle Honored In Manhattan

Over 5,000 people paused to view this exhibit, organized by a group of private citizens as part of the First American Bald Eagle Festival in Manhattan on June 20-22.

Situated at the Castle Clinton National Monument, the festival commemorated the 198th anniversary of Congressional designation of the bald eagle as our national emblem.



U.S. Fish and Wildlife Service photo

considered contaminating.) Samples from the Roebuck Spring basin, Roebuck Spring creek, and Roebuck Recreation Center resulted in readings of 490, 440, and 3,600 coliform per 100 ml, respectively. The high bacterial count apparently has its origin in sewage from septic tanks seeping into the ground water and surfacing at Roebuck Spring, especially after heavy rains.

Gas bubble disease can be caused by either high concentrations of nitrogen gas or high levels of bacteria in the water. A study of the Roebuck Spring population found that 15 of 30 adult specimens from the Roebuck Spring basin were affected by gas bubble disease. Seven of 30 adults were affected in the spring outflow creek immediately below the spring basin, and at the Roebuck Recreation Center (a little further downstream) no evidence of gas bubble disease was found. The study concluded that there is a progressive decrease in the disease with increasing distances from the spring basin.

The objective of the recovery plan is to prevent the extinction of the watercress darter by preserving, protecting, and enhancing its habitat; increasing darter populations within the species' present range; and establishing new populations, by transplantations within Jefferson County.

It is important, according to the Service-appointed recovery team, that preferred habitat and ecological requirements be strictly defined. The watercress darter appears to thrive in deeper, slow-moving backwaters of springs choked with aquatic vegetation such as watercress (*Nasturtium*), *Chara*, and *Spirogyra*. These allow for large populations of aquatic insects, crustaceans, and snails—the watercress darter's diet.

For all three populations, the recovery plan calls for the construction of low level dams to create spring-pond habitats, which are desirable for the species.

As for the gas bubble disease problem, the recovery team is unable to offer a solution. Replacement of the septic tanks by a sewage system might help, but it is possible that the disease is being caused by natural factors which have saturated the spring water with nitrogen gas.

Transplants are recommended by the team once the present populations have increased to the point where large numbers of individuals abound. Then transplants should be made from the healthiest population into suitable nearby springs within the Black Warrior River system in Jefferson County. Should the transplant populations thrive and reproduce, they should receive the same monitoring and protection afforded the now existent populations.

ARKANSAS PROMOTES EAGLE AWARENESS



photo courtesy of Arkansas Zoo

"Martha one-wing," a juvenile bald eagle, is shown here greeting Arkansas Governor Bill Clinton (right) as he proclaims Eagle Awareness Week (January 19-27, 1980) in the State. Arkansas recently became active in a campaign to educate the public about the need to conserve bald eagles and other endangered species, and next year plans to host an Eagle Awareness Month.

The State has asked us to share with the public its appreciation for the commendable efforts of Mr. Andrew Pursley (above, center), U.S. Fish and Wildlife Service special agent, in helping found the awareness program, which has generated needed public and financial support for eagle protection throughout the State.

RECOVERY SLATED FOR WATERCRESS DARTER

The Service has approved a recovery plan for the watercress darter (*Etheostoma nuchale*), an Endangered fish occurring in three springs in Jefferson County, Alabama.

At the time the watercress darter was listed as Endangered in 1970, the species was known from only Glenn Springs, which is located within 20 yards of Route 20, a highway with locally heavy traffic. Estimates of the numbers of individuals in this population have ranged from 400-700. Subsequent

surveys turned up two new populations of watercress darters—one in Thomas Spring and the other in Roebuck Spring.

The primary threats to the existence of the watercress darter are habitat modification and degradation, a limited range, and gas bubble disease. The recent growth of shopping and residential zones in the Birmingham-Bessemer area has led to the paving of acres of land. (Rainfall cannot continue to recharge the springs when it is carried off parking lots into drains and gutters.)

High bacteriological counts have been made in water samples from Glenn Springs and Roebuck Spring. On August 25, 1977, a bacterial count was made from Glenn Springs that turned up 350 coliform per 100 ml. of water. The presence of coliform organisms in water indicates contamination from some source such as surface water or fecal material from man or animals. (A count of more than 4 coliform per 100 ml. is

KEY DEER RECOVERY APPROVED

A recovery plan which has as its objective the stabilization of the Florida Key deer (*Odocoileus virginianus clavium*) population, as opposed to an effort to boost its numbers, has been approved by the Service. Although the population has apparently stabilized at around 350-400 deer, high mortality from road kills and a limited range keep this species in jeopardy.

A distinct geographical race of the Virginia white-tailed deer (*Odocoileus virginianus*), the key deer is the smallest race found in the United States. The average weight of an adult male is 80 pounds and an adult female weighs about 63 pounds. The average shoulder height ranges from 24 to 26 inches.

The center of the Key deer population is Big Pine Key, Florida, with an estimated 200-250 deer. Road kills by automobiles are the most serious threat to the deer on Big Pine Key, accounting for 76 percent of known mortalities of key deer from 1968 to 1973. (Other mortalities were caused by drowning, combat between males, capture for tagging, and unknown factors.)

Key deer are strongly attracted to newly burned areas, and will feed extensively on new woody and herbaceous growth for up to 6-9 months. Availability of drinking water seems to influence the distribution of Key deer throughout their range. Periods of drought find the deer utilizing the larger keys, with water, in favor of the smaller keys without drinking water.

To preserve the Key deer, the plan not only emphasizes the importance of maintaining the population level and available habitat, but also the integrity of the subspecies. According to the plan, because the Key deer are the product of a unique system of selective forces (a restrictive, insular environment with no natural predators), management should involve the retention of those natural selection factors that influenced their evolution. Under no circumstances, according to the plan, should a captive, zoo-bred herd be considered for restocking purposes.

What the plan does call for, among other things, is the acquisition of more land for the Key Deer National Wildlife Refuge, established in 1957. Key deer habitat is being developed rapidly, and their range is already extremely limited. The only way to insure adequate protection of this habitat is to incorporate it into the National Wildlife Refuge System.

Efforts to protect the herd and the integrity of the subspecies would include prohibition of hunting, restricting dogs from refuge lands, reducing speed limits, posting deer warning signs, and

fencing highways except at trail crossing points.

Other items covered in the plan are public awareness, monitoring the deer

population, experimenting with habitat manipulation, and conducting studies on the natural history and population dynamics of the Key deer herd.



Photo by Richard Thompson

Automobile collisions have taken their toll on key deer population numbers.

Rulemaking Actions

June 1980

TWO TEXAS PLANTS PROPOSED AS ENDANGERED

Two rare plants—the Texas poppy-mallow and Navasota ladies' tresses—threatened by the possible destruction of their native habitats have been proposed by the Service for listing as Endangered species (F.R. 6/18/80).

Navasota ladies' tresses

Possibly North America's rarest orchid, the Navasota ladies' tresses (*Spiranthes parksii*), was first collected in 1945, but was later thought extinct until its rediscovery in 1978. Subsequent searches resulted in the location of a second population near the species' type locality in Brazos County, Texas. However, in 1979, only nine individuals could be located at these two sites.

Due to its limited occurrence and extraordinary distinctiveness, the species is extremely vulnerable to extinction due to habitat destruction and collecting. One of the two populations occurs adjacent to an urban area, where land development is inevitable, while the other population is on ranch land now used for deer hunting. (Any change in land management practices in this latter area could destroy the few individuals remaining.)

Poppy-mallow

Confined to a small area of deep sandy soil blown from alluvial deposits along the Colorado River, the Texas poppy-mallow (*Callirhoe scabriuscula*) is threatened by sand mining and other factors. Averaging 2 to 4 feet in height, this member of the mallow family is an erect, simple (or basically branched) perennial herb bearing wine-purple petals in an open cup.

Because of its erect habit, grazing and associated trampling have seriously reduced the species' number in some areas, where there has also been a marked reduction in plant vigor. Cultivation, rural development, and road construction have also reduced the size and range of remaining populations, all of which occur on private land where they are vulnerable to habitat alteration and collection. Sand mining poses an imminent threat to all existing popula-

tions within their habitat in only one Texas county.

Background/Comments Solicited

Both of the subject species were included in a July 1, 1975, notice of review on the basis of the Smithsonian Report to Congress listing these plants as two of those considered to be endangered, threatened, or extinct. Subsequently, the species were among approximately 1,700 vascular plants proposed for listing as Endangered on June 16, 1976. (This proposal was later withdrawn, as it was not finalized within

time limits imposed under 1978 amendments to the Act.)

Because the publication of descriptive maps outlining their essential habitats would make these rare plants even more vulnerable to taking, the Service has determined that the designation of Critical Habitat is not prudent for either of these species at this time.

Comments as well as biological data in response to these proposals should be submitted by August 18, 1980, to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.



Proposed as an Endangered species, the Texas poppy-mallow is imminently threatened by sand mining operations.

Photo by Bonnie Amos

Amargosa Vole Under Review

Acting in response to a petition submitted by Mr. Earl Baysinger of the Service, the Service is reviewing the status of the Amargosa vole (*Microtus californicus scirpensis*)—a small rodent once considered extinct—to determine if it qualifies for listing under the Endangered Species Act (F.R. 6/18/80).

Long thought to have vanished from its native habitat, this marsh vole was rediscovered in 1973 in southeastern Inyo County, California, where a popu-

lation now thrives in the marsh community along the Amargosa River. Unfortunately, the known survivors are now subject to natural and human-related threats, including grazing and the burning of marshes.

Data on the status of and threats to the Amargosa meadow vole should be submitted to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

ENDANGERED STATUS PROPOSED FOR OAHU TREE SNAILS

Surviving members of *Achatinella*, an entire genus of tree snails nearly extinct from their Hawaiian habitat, have been proposed by the Service for listing as Endangered species (F.R. 6/26/80).

Known for its beauty, variability, and extreme localization, *Achatinella* formerly occurred throughout the forests of Oahu, once thought to cover most of the island. But by 1978, approximately 85 percent of the island's forest cover had been destroyed or altered. Fast-growing exotics were introduced, diluting *Achatinella*'s natural habitat. Forest fires and human disturbance opened up mountain slopes to non-native ferns and other plants. Since the turn of the century, most native woodlands below 1,200 feet—and with them more than 20 species of *Achatinella*—have disappeared from Oahu.

Due to their small geographical ranges, low reproductive rates, lack of defense mechanisms, and dependency on natural forest conditions, species of *Achatinella* remain highly vulnerable to human activities.

The genus has been seriously impacted by human-introduced predators (rodents like the arboreal roof rat (*Rattus rattus*) and *Euglandina rosea*, a carnivorous snail imported to control *Achatina fulica*, the giant African snail—also introduced to the island).

Overcollection is another major threat to the tree snails, prized for their beautiful, varied, and often rare shells. (Probably millions of snails have been collected since the 1800's.)

Of the 41 known *Achatinella* species, it is now believed that only the following exist:

<i>Achatinella apextulva</i>	
<i>A. bellula</i>	<i>A. lila</i>
<i>A. bulimoides</i>	<i>A. lorata</i>
<i>A. byronii</i>	<i>A. mustelina</i>
<i>A. concavospira</i>	<i>A. pulcherrima</i>
<i>A. curta</i>	<i>A. pupukanioe</i>
<i>A. decipiens</i>	<i>A. sowerbyana</i>
<i>A. fulgens</i>	<i>A. swittii</i>
<i>A. fuscobasis</i>	<i>A. toeniolata</i>
<i>A. leucorraphe</i>	<i>A. turgida</i>

The remainder are believed extinct.

Comments on the subject proposal, and any additional data on the status of and threats to species of *Achatinella*, should be submitted by August 25, 1980, to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

A public meeting on the subject proposal has been scheduled for Tuesday, August 19, at 8:30 a.m. in Conference Room 7322 in the Federal Building, 300 Ala Moana Blvd., in Honolulu, Hawaii.

(Critical Habitat has not been proposed for these species, as publication of definitive maps would make *Achatinella* more vulnerable to taking.)

KANGAROOS

Continued from page 1

species. All species were considered in need of protection from commercial interests, however, due to potential population reductions without adequate regulatory measures and because of the lack of specific data on the species' numbers.

To insure adequate protection of the three kangaroos, the Service imposed through special rules within the final listing rule (F.R. 12/30/74) a ban on the importation of the species' products and parts, stating that:

Upon receiving from the Australian Government a certificate that (1) a particular Australian State has developed an effective sustained-yield program for such wildlife and (2) the taking of such wildlife in that State will not be detrimental to the survival of the species or subspecies of which such wildlife is a part, the Director may . . . permit by publication in the *Federal Register* the commercial importation of any such wildlife originating from the State. . . . Prior to this time, the United States was the largest worldwide importer of kangaroo leather.

On May 21, 1979, the Service announced the review (in line with the required "5-year review" stipulated under 1978 Amendments to the Endangered Species Act) of a number of species listed prior to 1975, including the three kangaroos in question. In the process of collecting information subsequent to its notice, the Service also sent Dr. David Anderson of the Service's Utah Wildlife Cooperative Unit to Australia to obtain first-hand data on the status, threats to, and trends of the kangaroo populations in their respective Australian States.

Current Proposal Rationale

On the basis of aerial surveys and/or extrapolation techniques, estimates of kangaroo populations (all three species) in the Australian States expecting to export hides to the United States are as follows: New South Wales, 5,000,000; Queensland, 25,000,000; South Australia, 1,400,000; and Western Australia, 1,250,000 (for a total of 32 million). Based on population estimates through-

Continued on page 16

Confiscated Wildlife on

The Cleveland Museum of Natural History in cooperation with the U.S. Fish and Wildlife Service has mounted "Confiscated!", an exhibit which dramatizes the worldwide problem of illegal trafficking in endangered species. This exhibit marks the first time that the Federal

Government has allowed confiscated materials held in government warehouses to be exhibited by a museum.

Included in the exhibit are mounted specimens of endangered wildlife as well as products made from their skins

which entered the United States illegally and were seized by Service agents at ports of entry in New York and Chicago. Among the items on display are ivory carvings and jewelry fashioned from the tusks of marine mammals and African elephants, coats and other clothing



The green sea turtle (Chelonia mydas), considered one of the world's most commercially valuable reptiles, is prized for its meat, eggs, oil, hide, and shell products which are increasingly sought after in the fashion world.

Display

made from threatened cats such as jaguar, ocelot, and margay, as well thousands of dollars worth of shoes, hats, purses, and other accessories made from the skins of endangered birds, caimans, crocodiles, and sea turtles.

"Confiscated!" also traces the development of laws and international agreements designed to protect endangered wildlife from commercial exploitation.

The exhibit, funded by the Cleveland Foundation, will be on view in Cleveland through October 15, 1980, and

will then tour the country with stops in Cincinnati, Denver, New York, Dallas, Philadelphia, and other cities.

Admission to the Cleveland exhibition is free with regular Museum admission. Hours are Monday through Saturday, 10:00 a.m. - 5:00 p.m., and Sunday, 1:00 p.m. - 5:30 p.m.



Photo courtesy of the Cleveland Museum of Natural History

These luxury coats made from the skins of the Endangered margay, ocelot, cheetah, and leopard are just a few of the examples of illegal trafficking in endangered wildlife on display at the Cleveland Museum of Natural History.

SERVICE ANNOUNCES POTENTIAL PROPOSALS TO AMEND APPENDICES LISTS

The Office of Scientific Authority—acting through the Service as U.S. Scientific Authority for the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)—has published preliminary proposals in preparation for the submission of formal U.S. proposals to amend the CITES Appendices lists of protected species (F.R. 7/21/80).

Data had been solicited in an earlier notice (F.R. 4/4/80) to guide development of U.S. proposals for consideration at the third meeting of CITES parties to be held in February 1981 in New Delhi, India. The Scientific Authority is now preparing to finalize proposed revisions, which must be sub-

mitted to the Convention Secretariat by September 5, 1980.

The July notice contains more than 100 potential revisions, including a number of suggested additions, transfers from one appendix to another (according to the status of the species and the degree of threat by trade), and several proposed deletions from the protective lists. A number of whales, primates, birds, reptiles, and plants have been recommended for additional protection, while certain other species (including the bobcat, lynx, and river otter) have been suggested for removal from Appendix II (although the latter recommendation did not emanate from the Service). Proposed Service decisions

are provided in the July notice. (We regret that space limitations preclude our publication of the entire list in this issue, although we will attempt to carry final U.S. proposals in next month's BULLETIN.)

Comments and data on the potential proposals were to be submitted no later than August 20, 1980.

U.S. TO COMMENT ON AUSTRALIAN AND SOUTH AFRICAN PROPOSALS TO AMEND THE APPENDICES

As announced in the July 21, 1980, *Federal Register*, the Office of the Scientific Authority intends to support a proposal by Australia to list the parson finch (*Poephila cincta cincta*) on Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and is seeking comments and data in response to several South African proposals.

The finch was the subject of a previous notice (F.R. 5/16/80) soliciting information on the status of and trade in the species. No comments were received, however, and the Service has since submitted formal notice to the Convention Secretariat of U.S. intent to support the proposed addition, also suggesting that the other subspecies (*P. c. atropygialis*) be included on Appendix II for control purposes.

The Republic of South Africa recently submitted proposals to the Secretariat concerning a number of species and subspecies with recommended revisions as follows:

- Bontebok (*Damaliscus dorcas dorcas*)—Transfer from Appendix I to Appendix II.

- Roan antelope (*Hippotragus equinus*)—Add to Appendix II.

- Ruppell's parrot (*Poicephalus rueppellii*)—Add to Appendix II.

- Geometric turtle — Include the scientific name *Psammobates* (= *Tes-tudo*) *geometricus* in Appendix I in lieu of *Psammobates geometrica* to avoid taxonomic confusion.

- Girdled lizards and crag lizards (*Cordylus* spp. and *Pseudocordylus* spp.)—Add to Appendix II.

- Cape clawed or Gill's clawed toad (*Xenopus gilli*)—Add to Appendix I.

- Elephant's trunk plant (*Pachypodium namaquanum*)—Transfer from Appendix II to Appendix I.

Comments and data in response to the South African proposals were to be submitted by August 20, 1980. Kindly consult the *Federal Register* for details on the subject proposals.

OSA DEVELOPING PROCEDURAL REGS; PREPARING EXPORT FINDINGS FOR 1980-81

The Service's Office of the Scientific Authority (OSA) has published a notice of intent to propose procedures it will follow in carrying out its responsibilities as U.S. Scientific Authority for the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)—(F.R. 7/10/80).

While the former Endangered Species Scientific Authority (ESSA) had previously published proposed operating procedures for it to follow as U.S. Scientific Authority (F.R. 7/11/79), 1979 amendments to the Endangered Species Act reassigned Scientific Authority responsibilities to the Secretary of the Interior, at the same time establishing a commission to serve in an advisory capacity to the Secretary (see the accompanying article on ICAC). To promote public comment in the process of developing procedural regulations, OSA is now soliciting public input which

may help finalize OSA policies on the following:

(1) Circumstances under which the Scientific Authority would advise that exports of specimens of species included in Appendix I or II are not detrimental to the survival of the species; (2) Circumstances under which the Scientific Authority would advise that imports of specimens of species included in Appendix I are for purposes not detrimental to the survival of the species; (3) Whether findings on export permits should be made with respect to its component subspecies or geographically separate populations, in cases where an entire species is included in Appendix I or II; (4) Whether findings on export permits should be made with respect to impact of trade on the species involved, or with respect to some other species, in those cases where a species was listed to effectively control trade in another species; (5) Formulation of advice on steps to limit export permits so as to insure that the species will be maintained at a level consistent with its role in the ecosystem in which it occurs and well above the level at which it might become eligible for inclusion in Appendix I; and (6) Standards to be used in determining if an importer is suitably equipped to house and care for the living specimens.

Comments on policies and procedures that will aid in effective implementation of the Convention with regard to Scientific Authority responsibilities should be submitted to the Office of Scientific Authority, U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240, by August 18, 1980.

Now Formulating Export Findings

The same notice also announced OSA's progress in developing findings regarding the export of the bobcat (*Lynx rufus*), (*Lynx canadensis*), American Ginseng (*Panax quinquefolius*), Alaskan brown bear (*Ursos arctos*), Alaskan gray wolf (*Canis lupus*), and American alligator (*Alligator mississippiensis*) taken in the 1980-81 season.

Management and harvest reports, populations assessments, and other appropriate data have been requested from the States on these Appendix II species on which OSA will base proposed export findings for the coming taking season (likely to be published in the *Federal Register* in mid-August). Public comment will then be invited on the Service's proposed findings prior to the publication of final export findings in September.

ICAC: GEARING UP FOR ACTIVE U.S. ROLE IN CITES

Created under 1979 amendments to the Endangered Species Act, the International Convention Advisory Commission (ICAC) is nearly fully staffed and preparing to meet its recently mandated responsibilities with respect to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Composed of representatives from the Departments of Interior, Agriculture, Commerce, the National Science Foundation, the Council on Environmental Quality (CEQ), and the Smithsonian Institution, as well as an Interior-appointed member representing the State fish and game agencies (he is Dr. Douglas Crowe of Wyoming), the Commission elected Jane Yarn of CEQ as its chairperson in February. William Y. Brown, formerly of the Endangered Species Scientific Authority (previously functioning as the U.S. Scientific Authority for the Convention), has been selected as ICAC's executive secretary. (See summary of the 1979 Amendments in the January 1980 BULLETIN.)

In signing P.L. 96-159 last December 28, President Carter said, "The scientific integrity of the Convention will be preserved by the Commission's advice on the effects of trade, the listing of species on the Convention appendices, and the interpretation and implementation of the Convention." Charged with making recommendations to the Secretary of the Interior on "all matters pertaining to the responsibilities of the Scientific Authority under the terms of the Convention," the Commission signed a Memorandum of Understanding with Interior Secretary Andrus (acting as the U.S. Scientific Authority) in June

1980 setting forth policies for permit review, for making recommendations on revisions to the appendices lists, and on other matters regarding the implementation of CITES.

ICAC recently issued its work plan for the next fiscal year, setting objectives and "target dates" for discharging its new responsibilities, to include:

- refining procedures for the review of import and export applications.
- development of questionnaires and prototype forms to facilitate the review of permit applications.
- development of standards for determinations required of the Scientific Authority (addressing exports and introductions from the sea, and detriment with regard to Appendix I imports; developing a report on the biology and management of the bobcat, lynx, river otter, and ginseng with recommendations to guide export findings; and recommending suitable housing and care for the most heavily traded species).
- development of a system for evaluating trade in wild animals and plants (with a report soon to be published on 1977 trade).
- development of recommendations concerning appendices lists of protected species.
- development of papers/recommendations preparatory to CITES conferences.
- consultation to improve trade controls, and in other areas of international wildlife conservation.

ICAC meets monthly, with sessions open to the public. (For information on meeting dates phone 202/343-7407.)

Rulemaking Actions

KANGEROOS

Continued from page 11

out the various States, the nationwide kill quota for Australia has been set at 2.8 million kangaroos for 1980. According to data contained in Anderson's report, the Service believes that kangaroo species could sustain themselves at that level of take, barring any new unforeseen human or natural pressures.

Since enactment of the final rule imposing the importation ban, the Australian States have established mechanisms to regulate trade in kangaroo parts and products, involving tagging and recordkeeping that allow the States to trace parts or products throughout the commercial chain. The sustained-yield programs developed in Australia should effectively guard against overexploitation of the red, eastern gray, and western gray kangaroos for commercial purposes, and may actually benefit these species by creating monies for their research and management as well as an incentive to maintain their numbers in areas where they have in the past been treated as vermin.

Unfortunately, the illegal, often indiscriminate killing of kangaroos is almost impossible to prevent because of the task of enforcing protective laws throughout the vast Australian continent. The Service therefore finds that the "Threatened" status is still warranted for the three species, because of continued threats to their existence.

In line with existing plans and available population data, the Service feels it reasonable at this time to propose lifting the ban on importation of kangaroo products for 2 years, when trade and its impacts will be closely monitored to insure that taking for commer-

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	35	251	286	3	21	24
Birds	67	145	212	3		3
Reptiles	12	55	67	10		10
Amphibians	5	9	14	2		2
Fishes	31	11	42	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	3		2
Plants	49		49	7	2	9
Total	231	474	705	45	23	68

Number of species currently proposed: 54 animals
(2 plants)

Number of Critical Habitats listed: 36

Number of Recovery Teams appointed: 68

Number of Recovery Plans approved: 38

Number of Cooperative Agreements signed with States:
36 (fish & wildlife)
6 (plants)

June 30, 1980

cial purposes does not pose a threat to the continued survival of the large kangaroos in Australia. Should this proposal be adopted (at which time notice will appear in the *Federal Register*), the importation of kangaroo parts and products tagged or otherwise identified as removed from the wild in accord with the management plans of the approved Australian States will be permitted into the United States for a 2-year period during which time the situation will be reviewed to determine the appropriateness of future importation policies.

(Comments on the subject action were due July 16, 1980.)

CORRECTION

In the June 1980 BULLETIN, credit for the photograph of the Coachella Valley fringe-toed lizard (*Uma inornata*) was incorrectly given to Wilbur W. Mayhew. Credit should have been given to Philip A. Medica. We regret the error.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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July 1980, Vol. V, No. 7



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

Black Rhino Found Endangered

Hunted extensively for its valued horn, the African black rhinoceros (*Diceros bicornis*) has been determined by the Service to be an Endangered species (F.R. 7/14/80). Based on available data, the Service believes there may be fewer than 15,000 black rhinos remaining in the world.

One of five species of rhinoceroses occurring in Africa and Southeast Asia, the black rhino is the most numerous of the world's rhinos and yet appears dangerously threatened with extinction. In Kenya, probable losses over the last five to eight years have been figured at 95 percent of the black rhino population in Tsavo National Park, 85 percent in Amboseli, and over 90 percent of those that once survived in Meru National Park.

These dramatic losses are due primarily to trade in the species' parts and products. East African statistics on the legal export of rhino horn, which are carved into dagger handles or used in powdered form for medicinal purposes or as an aphrodisiac, show that 1.56 tons were exported annually from 1950-1971. From 1972-1976, legal exports jumped to 4.2 tons annually. In one instance, a single rhino horn reportedly sold for approximately \$15,000.

The biology of the black rhino may also be contributing to its demise. For a species that exists largely as solitary individuals at a naturally low density, the severe declines cause further problems by reducing the probabilities of reproduction. Also, the rhino is easy to stalk and those animals that are left show evidence of extreme disturbance in response to harassment.

The proposal to list the black rhinoceros (F.R. 10/1/79)—see the November 1979 BULLETIN—drew mainly



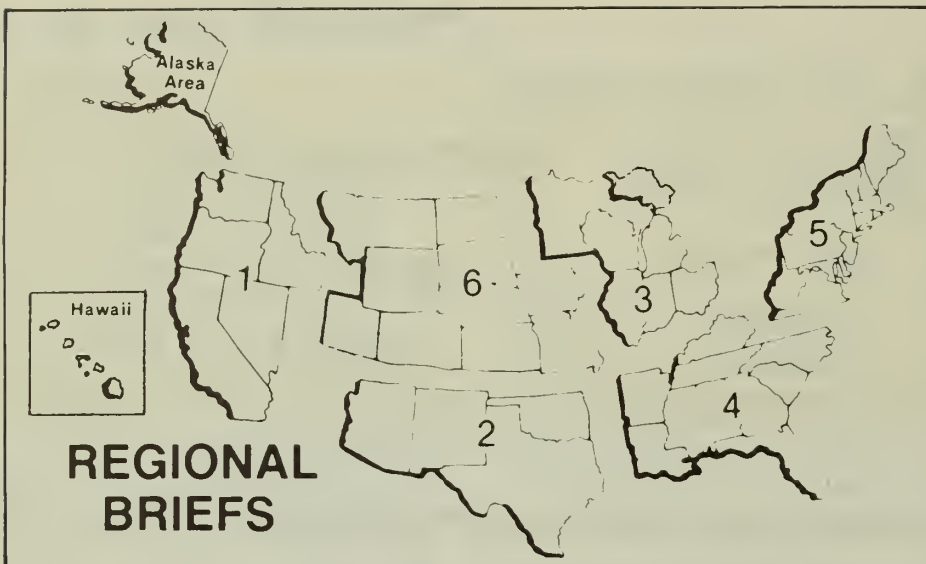
Photo by C. Kenneth Dodd, Jr.

Kenya's Meru National Park, only two years ago considered a stronghold for the black rhino, is now home to less than 20 specimens.

supportive comments. The only non-supporting comment came from Safari Club International, which recommended Threatened status for the species throughout most of its range except Kenya, where they agree the black rhino is Endangered. According to the Service, the black rhino is in danger of extinction throughout all or a significant portion of its range (the definition of Endangered under the Endangered Species Act of 1973). Listing this rhino as Endangered in parts of its range and Threatened in others would be inconsistent with the Act's intent.

Although the black rhinoceros is pro-

ected under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (it is on Appendix I), listing under the Endangered Species Act will provide additional prohibitions against importing the species or its parts and products into the U.S., as well as restricting transportation or sale in interstate or foreign commerce. Listing under the Act will also allow the U.S. to provide, if requested, technical expertise for establishing management and recovery programs and funds to assist in the implementation of such programs by appropriate foreign governments.



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of July.

Region 1. A cooperative agreement was signed with the Hawaii Department of Land and Natural Resources, paving the way for purchase of Kaelia Pond

on the Island of Maui, and allowing for future resale to the State. The resale would be with the provision that the State showed management capability for the Hawaiian waterbirds occurring at the pond.

The cui-ui (*Chasmistes cujus*) propa-

gation program is proving a success. So far 1.8 million fry have been released in the lower Truckee River in Nevada. An expected 2 million fry will be released by season's end.

The Oregon Native Plant Society and the Service sponsored a Threatened and Endangered Plant Symposium held in Ashland, Oregon. More than 200 attended.

Region 2. Of the 41 pups born to the red wolf (*Canis rufus*) captive breeding program during 1980, 28 survived to 3 months of age, a 68 percent survival rate, the highest the program has achieved to date.

Region 3. The Northern States Bald Eagle Recovery Team met in New York to view the hacking facilities at the Montezuma National Wildlife Refuge, with which they were greatly impressed.

The Kirtland's Warbler Recovery Team met to discuss updating the recovery plan.

Region 4. State and Service personnel began a cooperative effort on July 21, 1980, to capture the four dusky seaside sparrows (*Ammodramus maritimus nigrescens*) sighted during an intensive survey conducted earlier this year in Florida. Three have been captured so far, bringing the total number in captivity to five. All six birds are known or presumed to be males. Development of captive breeding and sperm preservation techniques are currently in progress (see our April 1980 Special Report).

A total of 417 snail darter (*Percina tanasi*) juveniles captured last fall in the Tellico Dam project area, and held over winter in the Morristown State Fish Hatchery, were stocked into the Elk River, Giles County, Tennessee. The Elk is the third river to receive a substantial number of snail darters since the transplant program was started in 1975.

Region 5. Service personnel met with State officials, university professors, and representatives of The Nature Conservancy to explore possible protection of segments of the St. Johns River in Maine. Ongoing research on Furbish lousewort (*Pedicularis turbi-shiae*) populations was reviewed and population inventories conducted with U.S. and New Brunswick (Canada) officials.

Rhode Island has been declared eligible for Endangered Species Cooperative Agreements for plants and for fish and wildlife. They will be the 11th State involved in the program once the agreements are signed.

Region 6. The total population (seven plants) of *Phacelia argillaceae*, an Endangered plant in Utah, was reduced to four plants in May because of trampling by sheep. The remaining population is being fenced for protection.

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CAPTIVE-BRED ANDEAN CONDORS RELEASED IN PERU

Michael Bender

The first release of Endangered, captive-bred Andean condors (*Vultur gryphus*) into wild habitat has been an apparent success. Shortly after the six young vultures were set free several weeks ago, they joined a small existing population in the coastal mountains of Peru, soaring alongside the older birds and adopting their feeding habits.

This encouraging news follows a 13-year experimental condor breeding project conducted by the U.S. Fish and Wildlife Service's Patuxent Wildlife Research Center near Laurel, Maryland (see the November 1976 BULLETIN). Although the Andean condor is the immediate beneficiary, the ultimate goal is to gain new information for saving its more critically Endangered relative—the California condor (*Gymnogyps californianus*).

The Andean condor program began in late 1966, when nine immature wild birds were captured in the Argentinian highlands and brought to the Patuxent Center. Eventually, after the condors

formed four pairs, scientists discovered ways to double, and in some cases even quadruple, normal egg production. The resulting chicks became part of a small, self-sustaining captive population from which the six juveniles were selected for the reintroduction effort.

On July 11, the young condors were flown from Dulles International Airport, Virginia, to Lima, Peru. They were accompanied on their 8-hour flight by Dr. James Carpenter, endangered species research veterinarian at the Patuxent Center. Upon transfer of the birds to the release sight on the Sechura Peninsula, they were placed temporarily in enclosures until they became accustomed to their new surroundings.

Researchers from the Patuxent Center (and its field station in California), the National Audubon Society, the University of Wisconsin, the Bronx Zoo, and the Crandon Park Zoo in Florida, along with Peruvian biologists, are cooperating on the Andean release project. The next phase is to observe the young condors' movements and their inter-

actions with the wild birds. Before their release, the introduced condors were fitted with small solar-powered radio transmitters which will allow researchers to track them through the remote mountains for up to 5 years. Under contract with the Service, Dr. Stanley Temple and Michael Wallace of the University of Wisconsin are directing the release and monitoring activities.

The six young condors now in Peru range in age from one to three years. Another group of five nestlings—one from Patuxent and four from the Bronx Zoo—will be released later this year. Through the use of different age groups, scientists hope to learn the most successful procedures for reintroducing captive-bred condors to the wild. This information, along with new capture and radio-tracking techniques, may give biologists a better chance to insure survival of both the Andean and the California condor. (For a fuller explanation of the California Condor Recovery Program, see the May 1979 Special Edition of the BULLETIN.)



Photo by Michael Bender

These Andean condors are part of the captive breeding program at the Patuxent Wildlife Research Center, which led to the successful reintroduction in South America.

CRACK DOWN RESULTS IN TWO SEA TURTLE INDICTMENTS

Clare Senecal

Grand juries in Brownsville, Texas, and Miami, Florida, recently returned indictments on a number of seafood firms and associated individuals for illegal trade in Endangered Pacific (olive) Ridley (*Lepidochelys olivacea*) sea turtles. The indictments follow year long and 18 month investigations, respectively, by government wildlife and customs agents.

A 12-count indictment was handed down on July 22, 1980, in Brownsville on two seafood firms and their owners for illegally importing and receiving over eight tons of endangered sea turtle meat. Service officials estimate that about 1,300 individuals had to be slaughtered to obtain the eight tons of filet tips, and chunks of turtle meat imported by the Texas and Pennsylvania firms.

Two of the individuals were charged with illegally receiving, concealing, and selling the protected meat which they knew had been imported into the United States in violation of the Endangered Species Act of 1973. One of them was also charged with importing meat fraudulently labeled as fish filets.

The Miami indictment, handed down on August 7, 1980, involves four men and six corporations for illegally importing 45 tons of meat from the Endangered Pacific Ridley into this country, and is the largest case in the Nation's history involving the smuggling of sea turtle products. A 13-count indictment charges the defendants with conspiracy, transporting sea turtle meat with fraudulent documents, or importing turtle meat in violation of the Act and the Convention on International Trade in Endangered Species (CITES). Service officials estimate that about 7,500 individuals from Mexico had to be slaughtered to obtain the 89,572 pounds of meat tips, chunks, and filets that were illegally imported into Miami International Airport between January 1978 and June 1979.

In the Miami indictments, two Mexican nationals and three Mexican companies were named.

All but one of these individuals and companies were involved in a conspiracy, the indictment charges. According to it, the defendants agreed to use the term "chunked turtle meat—*Dermatemys mawii*" on the various customs entry documents accompanying

the shipments. *Dermatemys mawii* is a Mexican fresh-water species of turtle whose importation into the States at present is legal.

Both the Brownsville and Miami cases are part of a larger Federal crackdown by five agencies aimed at curbing the booming illegal trade in endangered species products in the United States. The participating agencies are Interior's Fish and Wildlife Service, National Marine Fisheries Service in the Department of Commerce, U.S. Customs Service in the Department of Treasury, the Animal and Plant Health Inspection Service in the Department of Agriculture, and the Department of Justice.

It is a violation of the Act to import any type of sea turtle products, including meat, into the United States. This country banned all imports of sea turtle products in 1978. The breeding colonies of the Ridley turtle on the Pacific coast

of Mexico and the Gulf of California were listed as Endangered in 1978. Elsewhere, the species is listed as Threatened.

The adult Pacific Ridley weighs an average of 85 pounds and yields about 12 pounds of meat per animal. The meat, oil, and eggs of this species are in high demand, the prized meat going into the restaurant market and the eggs used in cooking and eaten as an aphrodisiac. In addition, the hides of the Ridley can be tanned and fashioned into shoes, handbags, and belts.

Collectively, the four species of sea turtle most heavily exploited for illegal trade (green, hawksbill, Atlantic Ridley, and Pacific Ridley) represent the most profitable wild animal on the international market today. Raw tortoise-shell, for example, now exceeds the prices paid for elephant ivory. Over 50 percent of a sea turtle—meat, shell, skin, and oil—is marketable in some form.

Criminal violations of the Act carry a maximum fine of \$20,000 and a jail sentence of up to 1 year. Criminal violations of customs law carry a maximum fine of \$10,000 and a jail sentence of up to 5 years.

SERVICE PROPOSES CHANGES TO

The Service has issued a proposal which would allow nationwide sale of American alligator (*Alligator mississippiensis*) meat and parts, except hides (F.R. 8/8/80). The proposal would revise the special rule on the American alligator which now requires buyers, tanners, and fabricators who handle American alligator hides to obtain a permit. The States of Louisiana and Florida have requested that the Service eliminate the need for fabricators to obtain a permit, if possible.

In the process of becoming manufactured products, American alligator hides, as well as the hides of other crocodilians, are funneled through a limited number of tanners worldwide who are capable of fully tanning marketable hides. At the end of this bottleneck numerous fabricators await who are capable of manufacturing marketable products from the hides. Eliminating the permit requirement for fabricators would enable the Service to concentrate its enforcement efforts where they are likely to be most effective—at the point where the alligator

hides are tanned. The Service would closely regulate the activities of buyers and tanners so that only lawfully-taken hides are tanned.

The Service has also been requested by the State of Louisiana to allow nationwide sale of meat and parts, other than hides, from lawfully-taken American alligators. Under the proposal, American alligator meat and parts, other than hides, may be sold or otherwise transferred anywhere in the United States, if the items are sold in accordance with the laws and regulations of both the State in which the taking occurs, and the State in which the sale occurs.

Although the Service has not required any particular form of State control over the sale of meat and parts from lawfully-taken American alligators, the Service continues to oppose unregulated sale. The following conditions may be imposed: (1) persons buying or reselling meat or parts must have a State license or permit, (2) current records of transactions must be maintained, (3) State officials, upon notice

DALLAS - FT. WORTH PROPOSED AS DESIGNATED PORT

Dallas-Ft. Worth, Texas, was proposed (F.R. 7/14/80) to become the ninth Federally designated port-of-entry for wildlife and wildlife products. Conferring port status on Dallas-Ft. Worth would allow the importation and exportation of fish and wildlife and related products through the world's seventh largest airport, serving both the metropolitan area and the south-central and south-western United States. Currently designated ports-of-entry are New York City, Los Angeles, Chicago, Miami, San Francisco, New Orleans, Seattle, and Honolulu. Under Federal law, most wildlife products must be routed through one of these ports for inspection by the Fish and Wildlife Service.

LIGATOR RULES

and subject to applicable limitations of law, must have an opportunity to examine inventory of meat or parts and records, and to copy records, and (4) meat sold in interstate commerce must be prepackaged and bear an identifying insignia or notation.

Public comments on this proposed rule were due by September 8, 1980.

FLORIDA UNDERTAKES THREATENED BUTTERFLY STUDY

submitted by Gerold Morrison, Florida
Game & Fresh Water Fish Commission

The Florida Game and Fresh Water Fish Commission has begun a one-year study of its two Threatened butterflies, the Bahaman (*Papilio andraemon bonhotei* Sharpe) and Schaus (*P. aristodemus ponceanus* Schaus) swallowtails, with funding assistance from the Fish and Wildlife Service. The study was initiated on April 1, 1980, and will culminate in the preparation of a Recovery Plan for the two species.

Ongoing habitat destruction, coupled with severely restricted geographic ranges and possibly intense collecting pressure, motivated the listing of these butterflies as Threatened under the Endangered Species Act in April 1976.

Schaus Swallowtail

P. aristodemus ponceanus presently occurs in portions of the upper Florida Keys. Its former range extended south to the middle (and perhaps lower) Keys and as far north as the Miami area. Other subspecies of *P. aristodemus* occur on Cuba, Hispaniola, and the Bahamas. Although data concerning fluctuations in population size and geographic range are not available, habitat destruction appears to be a major factor in the current range contraction.

This swallowtail is a forest insect, known only from upland "tropical hardwood hammocks" in which its host plants (*Amyris elemilera* and *Zanthoxylum tagara* [Rutaceae]) occur. Selective logging and farming, followed by intensive commercial development, have severely disrupted the native hammocks in many areas of the Keys. Recent sightings of the butterfly have been restricted to the islands within Biscayne National Monument and portions of northern Key Largo, where habitat disruption has been less severe. However, a new freshwater pipeline planned for northern Key Largo may allow more intensive development to occur there, posing a threat to both the forest and the butterfly.

Anecdotal accounts in the literature suggest the *P. aristodemus ponceanus* population sizes can fluctuate a great deal from year to year. Relatively high densities within certain portions of its range were reported during 1969-1972. In general, however, the butterfly appears to have been rare throughout its range during much of the present century. Unusually low densities were reported during 1973-1975, and the present study indicates similarly low densities during the 1980 reproductive period. However, low numbers during 1980 cannot be attributed to habitat dis-

turbance or to absence of the proper host plants, as they occur in areas which have not been recently disturbed and in which host plant abundances are high. The first quantitative data on egg and larval densities are being accumulated as part of the study, along with information concerning the sources and intensity of mortality during the immature stages. It is hoped that this information will serve as a baseline for future investigations of *P. aristodemus ponceanus* population dynamics. More detailed data concerning the butterfly's basic habitat requirements are also being sought.

Bahaman Swallowtail

Unlike the Schaus swallowtail, the Bahaman Swallowtail, *P. andraemon bonhotei* is not thought to have maintained breeding populations in North America during the present century. Rather, the butterfly has traditionally been considered an accidental visitor. Sporadic sightings in Florida have been dismissed as representing dispersing individuals or temporary unsuccessful colonization attempts.

P. andraemon is an Antillean species, with separate subspecies known from Cuba, Grand Cayman, and the Bahamas. A Cuban subspecies colonized Jamaica during the 1940's and is reported to be an occasional pest of citrus there. *P. andraemon bonhotei* occurs on several islands in the Bahamas, where the larvae feed on *Citrus* spp. and other members of the Rutaceae.

The inclusion of this butterfly on the Federal list of Endangered and Threatened species has been criticized by some lepidopterists, on the grounds that the status of the insect within the U.S. has not yet been adequately determined. Two unworn individuals collected near Miami during the 1940's have been cited as evidence of successful reproduction within Florida, as has a reported sighting of large numbers of adults within Biscayne National Monument in 1972. On the other hand, adults have been collected infrequently in Florida, leading several authorities to suggest that only temporary breeding populations become established following periodic colonization from the Bahamas. The butterfly has not been sighted in Biscayne National Monument in recent years, and conclusive evidence of a breeding population has not been obtained. Such evidence is now being sought, although no individuals of this species have yet been sighted during the study.

DEVIL'S HOLE PUPFISH RECOVERY APPROVED

The Devil's Hole pupfish (*Cyprinodon diabolis*), which occurs naturally only in Devil's Hole, a deep, water-filled, limestone cavern in Ash Meadows, Nye County, Nevada, stands to benefit from a Service-approved recovery plan. Because of its restricted habitat, the Devil's Hole pupfish was declared an Endangered species (F.R. 3/11/67).

The spring pool of Devil's Hole is located approximately 15 meters below the land surface where a shallow rock shelf approximately 2 by 4 meters is located. Just beyond the shelf, the spring descends to an unknown depth (more than 80 meters) into a myriad of chasms, mostly unexplored. Most of the pupfish reproductive and feeding activity takes place on the shallow shelf.

Population numbers of this pupfish fluctuate between the summer and winter months because of the amount of sunlight which penetrates their cavern habitat. Population numbers are higher during the summer when approximately 4 hours of sunlight penetrates the cavern daily. In winter, no direct sunlight reaches the water surface.

A transplanted population of *Cyprinodon diabolis* was established in 1972 in the Hoover Dam Refugium, an artificial refuge below Hoover Dam, Clark County, Nevada. This is now a reproducing population with numbers fluctuating from 48 to 69. The transplant population exhibits an overall increase in body size from the original Devil's Hole population.

The major threat to the pupfish is the reduction or complete loss of water needed to maintain its essential habitat. Other potential threats include surface runoff carrying sand, silt, and other habitat degrading elements, vandalism and accidents, and major land use changes in the surrounding area.

The primary objective of the recovery plan is to restore and maintain the Devil's Hole pupfish as a Threatened species in its natural habitat. According to the recovery team, the preservation of Devil's Hole in a natural condition is of the utmost importance in guaranteeing the survival of this species.

The plan recommends on-site patrols of Devil's Hole. Personnel could monitor the condition of the site, and their presence would discourage vandals.

To deal with the immediate threat of agricultural pumping on the water level, the plan calls on government and private interests to develop a plan for the Ash Meadows area based on a carrying

capacity that will not adversely affect Devil's Hole.

It is the goal of the recovery effort that Devil's Hole will eventually be restored to its natural water level of 1.4. (Measured in feet, water levels in Devil's Hole are designated by distance below a U.S. Geological Survey datum point installed on the rock wall above maximum water level.) This is not feasible at present, thus an interim level of 2.7 percent has been shown to provide sufficient habitat for the survival of the species.

At Devil's Hole, management should be directed toward maintaining a population which corresponds to natural habitat conditions. Under such conditions, populations are estimated to have been not less than 300 fish during late winter and maximum of not less than 700-900 fish during the late summer and early fall.

According to the plan, the Hoover Dam population can be used for research procedures such as habitat manipulation in the form of changing water temperature, food availability, substrate, and a variety of other factors. The determination of the effects that such manipulations have on the pupfish will aid in the preservation of the species.

Another recommendation by the recovery team is the establishment of new populations of Devil's Hole pupfish. The Amargosa Pupfish Station has been constructed for this purpose. The number of fish to be transplanted will not pose a threat to the native Devil's Hole population.

The recovery plan calls for an educational and public information program to include signs posted at the habitat sites, slide shows, and even displays at public aquaria.



Photo by James D. Williams

The Devil's Hole Pupfish Recovery Plan calls for the protection of this deep cavern, the only site where the species naturally occurs.

THE INCREDIBLE PEREGRINE— ON THE REBOUND?

"The Peregrine falcon is, perhaps, the most highly specialized and superlatively well developed flying organism on our planet today, combining in a marvelous degree the highest powers of speed and aerial adroitness with massive, warlike strength. A powerful, wild, majestic, independent bird, living on the choicest of clean, carnal food, plucked fresh from the air or the surface of the waters, rearing its young in the nooks of dangerous mountain cliffs, claiming all the atmosphere as its domain and learing neither beast that walks nor bird that flies, it is the embodiment of noble rapacity and lonely freedom. It has its legitimate and important place in the great scheme of things, and by its extinction, if that should ever come, the whole world would be impoverished and dulled."

G. H. Thayer, 1904, *Bird Lore*

Three subspecies of peregrines are found in North America—the Arctic peregrine (*Falco peregrinus tundrius*) in Alaska and Canada, Peale's peregrine (*F. p. pealei*) in the Pacific Northwest, and the American peregrine (*F. p. anatum*) in the rest of the continent.

Peregrines have never been numerous in this country. During the 1940's, there were an estimated 500 to 1,000 breeding pairs. By the early 1960's, there were no nesting peregrines left east of the Rockies. Less than 150 pairs were still nesting in the mountainous areas of the west from Washington to New Mexico. Meanwhile, the Arctic peregrine also suffered a serious but less catastrophic decline.

Reduced to precarious lows, the American and Arctic peregrine falcons were listed for protection as "Endangered" species in 1970, when the effort to boost their recovery was begun in earnest.

Dona Finnley

Revered as one of the world's most magnificent birds of prey, the peregrine falcon is a gifted and graceful flier—prized since ancient times for its strength, beauty, and aerial skills as a symbol of avian nobility.

A decade ago, the American pere-

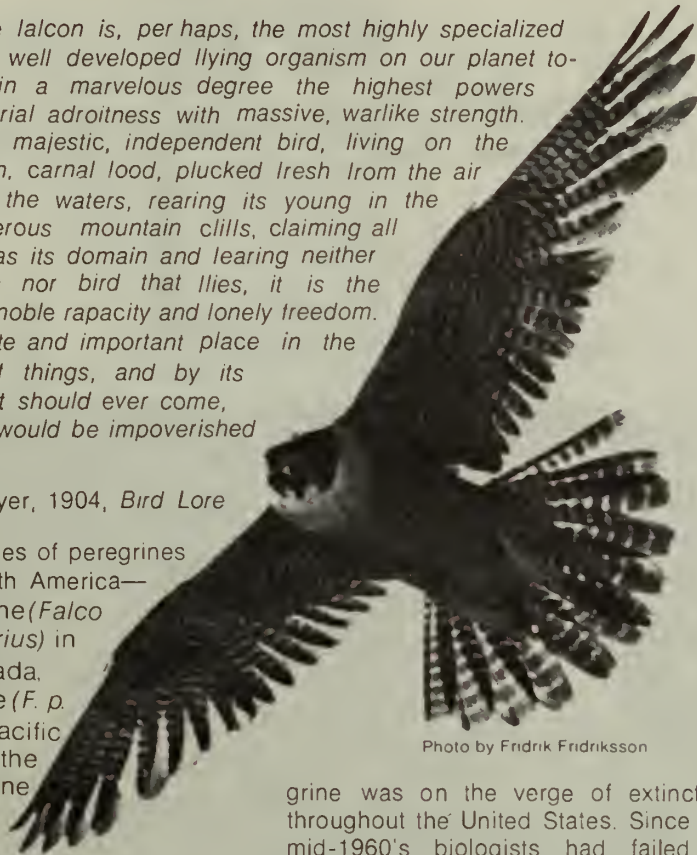


Photo by Fridrik Fridriksson

grine was on the verge of extinction throughout the United States. Since the mid-1960's biologists had failed to identify a single wild individual in the U.S. east of the Rockies. But, this spring, thanks to the devoted efforts of ornithologists, falconers, and conservationists, four young peregrines were hatched in the wild in the East—bringing with them renewed hope for the survival of this unique species in North America.

The successful parents—themselves captive-bred by The Peregrine Fund of Cornell University in a cooperative program with the U.S. Fish and Wildlife Service, State fish and wildlife agencies, and conservation organizations—had been released as part of an intense campaign to restore the depleted peregrine as a nesting bird in the Eastern United States.

Although shooting and habitat loss have taken their toll on the peregrine, the species' dramatic decline in this country was mainly the result of the widespread, indiscriminate use of DDT and other persistent pesticides in the 1950's and 60's.

Biologists are now encouraged that self-sustaining populations of the peregrine may indeed be re-established in the East. "This is the final test, the proof of the pudding," said Dr. Thomas J.

Cade, director of The Peregrine Fund, about the newly-hatched young. "This is what we've been waiting to see, proving that our techniques work. The final hurdle was what has just been accomplished—namely, that these captive-bred peregrines can reproduce on their own."

New Jersey Successes

The success this year in New Jersey marks the first time in over 20 years that peregrine falcons have been known to fledge their own young from eyries in the Eastern U.S.

Early in March, six captive-reared peregrines that had paired in 1979 were sighted by State biologists near their release sites in New Jersey's coastal marshes. By the first week in April, two females had apparently laid eggs and were no longer leaving their nests.

Around May 3rd, a lone, long-awaited female emerged from its egg atop a man-made tower on the Service's Brigantine National Wildlife Refuge on the Jersey coast. (The hatchling was the product of a female released just 2 years earlier at Manahawkin, and a male also released in 1978 from Barnegat Bay—a third New Jersey reintroduction site.)

The second triumphant pair produced two male hatchlings and a female sometime around May 7 at Manahawkin, on property owned by the A.T. & T. Long Lines Division (and managed by the Barnegat National Wildlife Refuge). The female parent was released at Barnegat Bay in 1978, while the male adult was apparently released from the same site in 1975.

Both nests were supplemented with an additional female chick in an effort to improve this year's rearing success and promote increased numbers for breeding in future years. All of the fledglings had tested their wings by June and, within another month, had learned to take their own prey.

Through its Division of Fish, Game, and Wildlife, New Jersey was one of the first States to cooperate with Cornell's Peregrine Fund in the restoration of the peregrine by "hacking" them to man-made towers. A technique used for centuries by falconers, *hacking* is the painstakingly delicate process of weaning nestling raptors back to the wild. Whether on specially-erected towers

Continued on page 8

or at natural cliff sites, nestlings are placed in a hack box where they are fed unobtrusively by humans until they are about to fledge. The birds are then allowed to wander on their own, gradually learning to fly and hunt for themselves (under watchful human eyes) until they become fully self-sufficient.

With two-thirds Federal matching fund assistance from our Service, New Jersey's recovery program began when the first hacking tower was erected near Barnegat Light in 1975, with a second, third, and fourth tower built in subsequent years. (Including the 6 released in 1980, more than 60 captive-produced young have been hacked from towers on New Jersey's coast in the past 5 years.)

Paul D. "Pete" McLain, who supervises the State's Endangered and Non-game Species Project, says the towers were immediately successful in attracting the adults back to the sites where they were hacked. "We were so very hopeful in 1979, when a pair laid and attempted to incubate three eggs that were later found broken on the Manahawkin tower. But we are now especially gratified by our 1980 success," adds McLain, "largely the result of the combined dedication of our own endangered species biologists and the personnel of The Peregrine Fund."

Eastern Reintroductions and The Fund

From 1975 through 1980, 272 captive-reared peregrine falcons have been released at 20 locations in nine eastern States under the cooperative program between Federal and State agencies, supporting organizations, and The Peregrine Fund.

In 1970, Cornell University launched its pioneering program with the construction of its "hawk barn"—a unique chamber designed to house and propagate peregrines on a large scale. Tom Cade, a long-time falconer and raptor biologist who has directed Cornell's Peregrine Fund since its inception, started the program out of his own devotion to restoring the peregrine to the wild in the East. Cade hired James D. Weaver to head up the propagation effort in 1971. Using various approaches including artificial insemination, Weaver and Cade have raised nearly 400 birds for use in the release program, with their original breeding stock contributed by falconers (or birds that had themselves been bred in captivity since they were nestlings).

As the young birds derive important behavioral traits from association with the parent birds, all Cornell chicks intended for breeding in the wild have

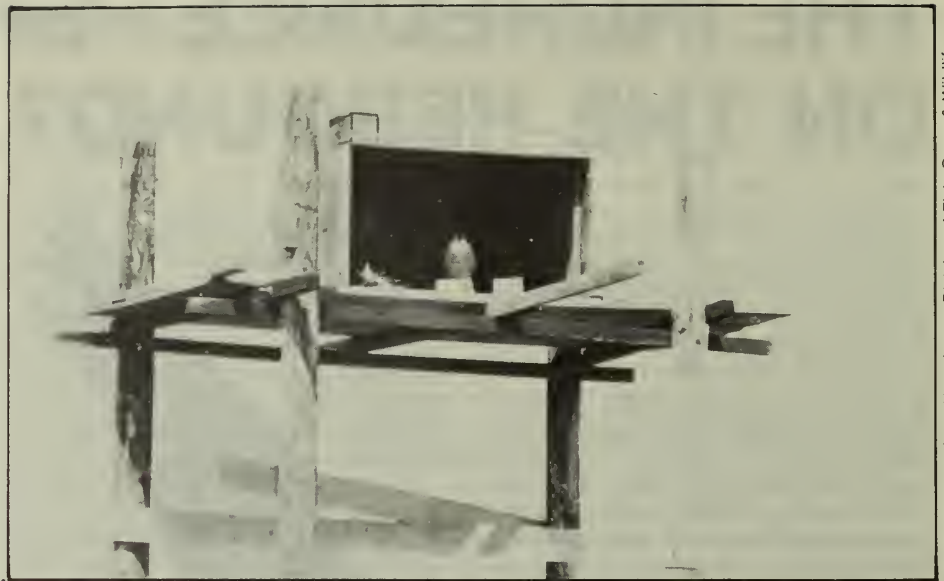


Photo courtesy of the New Jersey Division of Fish, Game & Wildlife



Photo courtesy of The Peregrine Fund

Clustered to the left are three of the first peregrine falcons hatched in the wild in the Eastern U.S. in more than 20 years. (The fourth chick was later added to the brood.) All have since fledged from this hack station in Manahawkin, New Jersey, erected as part of the Cornell/New Jersey reintroduction project—where one of the successful peregrines was released only 2 years ago.

been raised by adult falcons, with exposure to humans kept at a minimum. Viewed through one-way glass surrounding Cornell's breeding chambers, mating is generally preceded and followed by an elaborate ritual. Actual copulation is accomplished in about 4 seconds, with the male alighting on the female's back, and should result in a fertile peregrine egg in 18 hours.

The eggs are then placed in one of 10 incubators, where they develop for about 5 weeks before hatching. Housed for up to 3 weeks in aluminum pans, the hatchlings are eventually returned to an adult pair for another week or two. Then they are taken from the barn, and the process of hacking is begun.

Personnel at the Fund had always considered their reintroduction efforts "experimental" in nature, with the basic objectives of developing release techniques and determining whether or not the hacking process offers a reliable way of re-establishing breeding peregrines. But this year's success should bring the Fund and its supporters closer to their eventual aim of building up an entire self-sustaining peregrine population on the east coast.

Working toward this goal, release sites have been carefully located either in close proximity or along geographic features such as river drainages and coastlines to increase the likelihood that released birds will find one another,



"Scarlett," a Cornell-bred peregrine, with two of the chicks she adopted and raised last year atop Baltimore's tallest building.

pair, and breed. Steven Sherrod, in charge of the Fund's eastern reintroduction program, said the past 3 years' releases have been concentrated in three regions: coastal New Jersey the Chesapeake Bay, and New England. "In effect, we've been trying to saturate each region to build up three population centers," he said. Releases in New Jersey and the Chesapeake Bay have been from artificial sites, while those in New England have been from natural cliffs where records indicate a history of preregrine occupancy.

Four refuges in the Service's 412-unit chain of National Wildlife Refuges are currently hosting release projects: Brigantine and Barnegat in New Jersey,

and Chincoteague and Fisherman's Island in Virginia.

City Sites

Not only are man-made towers considered ideal for the hacking of peregrine falcons; tall city buildings are also looked to as promising release sites under the right circumstances.

The nesting of peregrines atop skyscrapers—as their own preferred alternative to cliffs—is not without precedence. The birds have in the past been observed occupants of city buildings in Europe, Asia, Africa, and Australia, as well as in North American cities such as Montreal, New York, and Philadel-

phia.

In some ways, the city environment is perfectly suited for the raptor—providing an abundance of pigeons, starlings, and other birds on which to feed, as well as protection from hunters. It is also relatively free from nest predators, like the ubiquitous great horned owl so often found at natural eyries.

A city release was sponsored by the Fund and our Service last year in the Nation's capital, when four young peregrines were hacked into the wild from the roof of the Department of the Interior. (Peregrines were known to nest in the Washington, D.C. area along the Potomac River in the mid-1930's.

A second release project in Washington was conducted by The Peregrine Fund this summer from the Smithsonian Institution. Six hatchlings approximately 6 weeks old were placed on one of the "Castle" towers in June, and have since adapted to the "wild" around the Smithsonian mall and Capitol Hill.

Perhaps the best known city dweller of the East, however, is Scarlett—the Cornell-reared peregrine who adopted Baltimore's tallest building as her home after her countryside release 2 years earlier in the U.S. Army's Aberdeen Proving Ground in Maryland. Last year, she was apparently stimulated into breeding behavior by her own reflection in the glass of U.S. Guaranty and Fidelity's 33rd floor, and laid three infertile eggs. Four nestlings were promptly sent by Cornell as substitute's for the eggs, and Scarlett proved a model mother.

This spring, a 2-year old male named Rhett was brought to Baltimore with great hopes that the two would pair and breed. They took to each other right away—the first successful effort to establish a pair bond between a wild and a trained falcon. (Unfortunately, they met too late to mate in 1980, although the pair together raised Cornell-introduced chicks this year.)

Late in July, peregrines were returned to New York City after a 35-year absence. Three "eyases" were placed atop the Manhattan Life Insurance Company building on 57th Street as part of the Cornell program (this time with additional financial support from the World Wildlife Fund-U.S.). Their new home includes a view of Central Park where pigeons abound, and it is hoped that they will one day return to the Big City to breed.

In a fourth cooperative venture—between Cornell, The College of William and Mary (with matching funds from the Service through Virginia's grant-in-aid program), and the Virginia National Bank—six young peregrines were introduced to a hack box on the 7-story Royster Building in Norfolk. Hacking

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Rulemaking Actions

July 1980

SERVICE DETERMINES STATUS, CRITICAL HABITAT FOR FOUR SAN MARCOS RIVER SPECIES

In a final rule, the Service has listed the San Marcos salamander (*Eurycea nana*) and the San Marcos gambusia (*Gambusia georgei*) as Threatened and Endangered species, respectively, and has determined Critical Habitat for these two species and that of the Texas wild rice (*Zizania texana*) and fountain darter (*Etheostoma fonticola*) (F.R. 7/14/80). These species will receive full protection under the Endangered Species Act of 1973, as amended, with the single exception that the San Marcos salamander

has been listed with special rules which allow taking in accordance with Texas State law.

The San Marcos salamander and gambusia were proposed for listing with Critical Habitat on July 14, 1978 (see the August 1978 BULLETIN). On March 6, 1979, the Service withdrew all pending Critical Habitat proposals in compliance with 1978 amendments to the Endangered Species Act. Critical Habitat was repropoed for these two species on March 19, 1980 (and both a

public meeting and hearing were subsequently held on the proposal).

The Texas wild rice and fountain darter are both already listed as Endangered (F.R. 4/26/78) and their Critical Habitats were proposed for the first time in the March 19, 1980, notice.

The greatly restricted distribution of these four species, only known from the San Marcos River system in Hays County, Texas, and apparent intolerance of habitat conditions outside the immediate vicinity of this spring system,



Photo by Bob Edwards



The Endangered San Marcos gambusia is found only in a 1-mile stretch of the San Marcos River.

Spring Lake in Hays County, Texas is part of the area determined to be Critical Habitat for the San Marcos salamander, Texas wild rice, and fountain darter.

Photo by C. Kenneth Dodd, Jr

gives evidence to their vulnerability. Anticipated increased use of groundwater and the probability of contaminants as a result of real estate development activity over aquifer recharge zones constitute serious potential threats to the continued existence of the species. A series of drought years similar to 1956 conditions, coupled with the effects of increasing human impact, could bring about the extirpation of these species from major segments if not all of their currently known ranges.

San Marcos Gambusia

The San Marcos gambusia is found only in a 1-mile stretch of the San Marcos River. The areas inhabited by this fish are open areas away from the stream banks with a minimum of aquatic vegetation over a mud bottom with little current. The habitat is also characterized by thermal constancy. Any actions which would increase vegetation, disrupt the mud bottom, or alter the temperature regime could easily eliminate the species.

Texas Wild Rice

A limited range, apparent inability to reproduce sexually in its native habitat, habitat destruction, and the possibility of hybridization are the major threats to the continued existence of this plant. Texas wild rice is adapted to conditions of clear water, uniform annual flow rate, and constant year-round temperature. The plants do not survive in stagnant water. Any action which would significantly alter the flow or water quality of the San Marcos River, where it occurs, could adversely modify the Critical Habitat. The Critical Habitat for the Texas wild rice includes Spring Lake and the San Marcos River downstream to its confluence with the Blanco River.

San Marcos Salamander

Threatened status is due mainly to a limited range coupled with the threat of lowered water tables affecting Spring Lake, the headwaters of the San Marcos River. The owner of Spring Lake, Aquarena Springs, has taken care to safeguard the animals in the lake and has cooperated with biologists from the Texas Parks and Wildlife Department

to ensure that populations can be maintained. However, the lowering of the water tables in the area such that Spring Lake could become dry or intermittent could destroy the species' only habitat. Because of a large population size, take is not seen as a threat to the species, hence the special rule.

Fountain Darter

Populations of this fish species could be reduced or eliminated by the destruction or significant reduction of aquatic vegetation in Spring Lake and the San Marcos River. The preferred habitat of adult and young fountain darters are areas with rooted aquatic vegetation which grows close to the substrate with filamentous algae present. The darter could also be affected by impoundments, excessive withdrawal of water, and pollution. An impoundment on the lower portion of the San Marcos River apparently eliminated the species in that section of the river. The Comal River population of fountain darter was extirpated when its habitat was reduced to isolated pools after excessive removal of water. Critical Habitat includes only the fountain darter's present range in the San Marcos River.

Because each of these species occupies an extremely restricted range, and is, therefore, highly susceptible to changes in habitat, the Service has designated the entire known respective ranges of these species, within the San Marcos River system, as Critical Habitat.

Five Species Proposed as Endangered in U.S.

Because of an inadvertent oversight, individuals of the short-tailed albatross, thick-billed parrot, wood bison, northern swift fox, jaguar, margay, and ocelot which may occur in the United States are not officially listed as Endangered species, although all such individuals occurring in foreign countries are now so listed. The Service is proposing to list five of these species as Endangered in their U.S. ranges to correct the oversight which led to their exclusion from the list. (F.R. 7/25/80).

(These species were listed under the 1969 Endangered Species Conservation Act, which had separate procedures and separate lists for foreign and domestic species. When the 1973 Endangered Species Act repealed the 1969 Act, these species were placed on the 1973 combined list without completing the procedures for listing species which occur in the U.S. It had always been the intention of the Service to list as Endangered all individuals of the above seven species, both foreign and domestic.)

The northern swift fox (*Vulpes velox hebes*) is not being proposed for listing in the U.S. at this time because of uncertainties regarding its taxonomic status and distribution. These uncertainties are being investigated, and a proposal to list the species may be forthcoming when studies are completed. The wood bison (*Bison bison athabasca*) is not being proposed because no pure-bred individuals are known to occur in the U.S. The Yellowstone bison herd, which is basically wood bison in genetic makeup, is known to be mixed with plains bison stock (*B. b. bison*) and thus contains hybrid individuals.

The factors affecting the proposed species are outlined below:

- Short-tailed albatross (*Diomedea albatrus*)—In the late 1800's and early 1900's, plume hunters virtually eliminated the species. Formerly an abundant bird throughout the North Pacific, the total population (which may have numbered over a million in prehistoric times) is now thought to be less than 150 birds. Even when abundant, this bird approached land no closer than two miles except when nesting.

- Thick-billed parrot (*Rhynchopsitta pachyrhyncha*)—This parrot nests in the Sierra Madre Occidental of northwestern Mexico and wanders north over the central plateau to the State of Michoacan. Large flights into southern Arizona and probably southwestern New Mexico occurred up to 1919. The parrot appears to be totally dependent on mature highland pine forests for food (pine seeds) and nest sites (abandoned woodpecker holes or natural cavities). Because of cutting of the Mexican forests, the bird has rarely been seen in the last several decades, even in Mexico. The last verified U.S. reports were in the 1930's.

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- **Jaguar (*Panthera onca*)** There are probably no resident or breeding populations left in the U.S., but occasional stragglers wander into New Mexico, Arizona, and Texas, where they are generally shot as unwanted predators. Jaguars have not been reported in the wild from New Mexico since 1904, from Arizona since 1971, and from Texas since 1948.

- **Ocelot (*Felis pardalis*)**—The primary distribution of this species is Central and South America. Formerly, the ocelot was known to occur in parts of Arizona and Texas. Today, populations are known to exist only in the Rio Grande area of southeastern Texas, where signs indicate their presence in eastern Cameron County, and scattered portions of Willacy and Kennedy Counties. The Ocelot is threatened by habitat destruction in the form of brush clearing for growing citrus crops, vegetables, and cotton. By 1940, most suitable ocelot habitat in Texas was gone. Predator control operations in Arizona and Texas have also helped extirpate or reduce ocelot populations.

- **Margay (*Felis wiedii*)**—The margay is known in the United States from a single specimen taken at Eagle Pass, Maverick County, Texas. There are almost certainly no resident populations in the U.S. now, but it is possible that an individual may wander into Texas from Mexico as was probably the case with the U.S. specimen.

All of the above species are known to be Endangered in the areas of their primary distribution and abundance outside of the United States. Because U.S. populations are only peripheral to the main populations of these species, the extreme precariousness of the U.S. populations is emphasized. Critical Habitat is not being proposed for any of these species at this time because such a determination is impossible given the migrating nature of these species.

The Service is soliciting any comments or suggestions concerning any or all of the species in this proposal from the public, other concerned governmental agencies, the scientific community, industry, private interests, or any other interested party. Comments should be sent to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240, and should be received by September 23, 1980.



Photo by S.M. Chambers

Hay's Spring amphipod, which occurs only in a small spring in the Nation's Capital, is proposed as an Endangered species.

Endangered Status Proposed for Hay's Spring Amphipod

The Hay's spring amphipod (*Stygobromus hayi*), an aquatic crustacean occurring only in a small spring within the National Zoological Park in Washington, D.C., is being proposed by the Service as an Endangered species (F.R. 7/25/80).

Originally proposed for Endangered status on January 12, 1977, and subsequently withdrawn on December 10, 1979, because of 1978 amendments to the Endangered Species Act which substantially modified procedures for listing species, the Hay's spring amphipod is being repropose based on significant new information. (This species was originally proposed under the common name Hay's spring scud.) Because of the threat of elimination of its only known habitat through pollution, construction activities, and other disruptions, this species is in danger of extinction.

Eyeless and unpigmented, the Hay's spring amphipod is found only in a small spring in the National Zoological Park. The spring emerges from the rocky western wall of Rock Creek Valley and flows about 35 meters into Rock Creek. The portion of the spring inhabited by the amphipod is less than 1 meter wide. The small size of the habitat makes the species extremely vulnerable to construction activities which have already drastically reduced the number of springs in Washington.

If construction activities are not carefully carried out, they could easily result in the elimination of the spring habitat. Such activities have eliminated most of Washington's springs during the last 100 years. A fence now surrounds the spring, but this is not adequate protection from heavy equipment moving even slightly onto the hillside from which the spring flows.

Because the species is so rare, possible collection for scientific or other purposes could pose a threat to the continued existence of the Hay's spring amphipod.

Interested persons or organizations are requested to submit comments to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240. Comments from the public must be received by September 23, 1980.

Service Lists Two Butterflies

Two butterflies, the Palos Verdes blue (*Glaucopsyche lygdamus palosverdesensis*) and Oregon silverspot (*Speyeria zerene hippolyta*), have been listed by the Service as Endangered and Threatened species, respectively, with Critical Habitat determined (F.R. 7/2/80).

Both species had been proposed for listing in the July 3, 1978, *Federal Register* (see the August 1978 BULLETIN), and on March 26, 1980, Critical Habitat was repropoed for the Oregon silverspot and proposed for the first time for the Palos Verdes blue butterfly (see the April 1980 BULLETIN).

Palos Verdes Blue

Occurring at only three sites on the Palos Verdes Peninsula, Los Angeles County, California, this lycaenid butterfly is threatened by weed control practices that adversely affect its larval foodplant, a locoweed (*Astragalus trichopodus leucopsis*), and in one location, recreational development. The Palos Verdes blue butterfly was originally known from only one site, where it was extirpated by housing development.

A public meeting and a public hearing were held on the Critical Habitat proposal for this species on April 18 and May 12, 1980, respectively.

Oregon Silverspot

An orange and brown butterfly with silver spots on the underwings, the Oregon silverspot formerly occurred along the coasts of Oregon and Washington, but most of the colonies have been extirpated due to housing and park development. At present, only one healthy colony is known. The butterfly, which belongs to the family Nymphalidae, is threatened with housing development and increased recreational use of the coastal areas to which it is restricted.

This species is found only in the salt spray meadows along the extreme edge of the Pacific Coast. It has been reported from one site in Washington and seven sites in Oregon. The only healthy colony is the one occurring at the Rock Creek-Big Creek site in Lane County, Oregon. This area has been designated as Critical Habitat.

The only apparent Federal involvement affecting the designated Critical Habitat is the Forest Service's management of portions of Siuslaw National Forest. The Forest Service intends to protect the Oregon silverspot butterfly and its habitat.

Both a public meeting and a public hearing were held on the reproposal of Critical Habitat for the Oregon silverspot butterfly on April 15 and April 29, 1980, respectively.

The effective date of the rulemaking listing the Oregon silverspot butterfly as Threatened with Critical Habitat is October 15, 1980.

Key Mud Turtle Proposal Withdrawn

In line with 1978 amendments to the Endangered Species Act, the Service is withdrawing its proposal to list as Endangered with Critical Habitat the Key mud turtle (*Kinosternon bauri*) (F.R. 7/16/80).

Under the amendments, a proposed rule which has not been finalized within two years of its publication in the *Federal Register* must be withdrawn. (The amended Act also authorized a 1-year suspension of all withdrawals until November 10, 1979.) The time limit has expired for listing the Key mud turtle, originally proposed with the Plymouth red-bellied turtle (F.R. 5/19/78—see the June 1978 BULLETIN). This turtle may only be repropoed for listing if it is determined that sufficient new information is available to warrant such a proposal. The Plymouth red-bellied turtle (*Chrysemys rubiventris bangsi*) was listed as Endangered with Critical Habitat on April 2, 1980.

Leopard Comment Period Extended

The proposal to reclassify the leopard would also permit the importation into the United States of legally-taken, sport-hunted trophies under the terms and conditions specified by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). (The leopard is listed on Appendix I of CITES, which means that a valid export permit from the country of origin would be required, and a valid permit must be issued by the U.S. Management Authority for the Convention, before a trophy could be imported. An export permit will not be granted by a nation party to the Convention unless its Scientific Authority finds that such export will not be detrimental to the survival of the species. The U.S. Management Authority will not issue an import permit unless it determines that

an export permit has been granted and that the importation is not for primarily commercial purposes, and unless the U.S. Scientific Authority has advised that the importation is for purposes which are not detrimental to the survival of the species.)

All comments and materials must be received no later than November 24, 1980, by the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

KANGAROO COMMENT PERIOD REOPENED

The comment period on the Service's proposal to permit commercial importation of the red (*Megaleia rufa*), eastern gray (*Macropus giganteus*), and western gray (*M. fuliginosus*) kangaroos will be reopened between September 16 and October 1, 1980 (F.R. 8/22/80). The Service will also hold a public hearing on this proposal. The public hearing will be held Tuesday, September 16, 1980, at 9:00 a.m. in Room 8068, Main Interior Department Building, 18th and C Streets, N.W., Washington, D.C.

Silver Rice Rat Reviewed

The Service has accepted a petition to list a small mammal, the silver rice rat (*Oryzomys argentatus*), as either an Endangered or Threatened species (F.R. 7/14/80). Only recently discovered during the winter of 1972-73 on Cudjoe Key, Florida, the silver rice rat is threatened by loss of habitat due to drainage and filling for commercial development, road construction, and mosquito control.

Known from only four specimens (the two collected on Cudjoe Key and two more collected in 1976 and 1980 on nearby Raccoon Key), it is possible that the species occurs on several other islands, but its rarity and secretive nature make it difficult to locate.

The Service is now assembling supporting information to determine if the species warrants a proposal for listing and Critical Habitat determinations.

Service Reviews Key Largo Woodrat, Cotton Mouse

Two small mammals, the Key Largo woodrat (*Neotoma floridana smalli*) and Key Largo cotton mouse (*Peromyscus gossypinus allapaticola*) have been recommended, through a petition to the Service, for addition to the U.S. List of Endangered and Threatened Wildlife. (F.R. 7/28/80).

Both species formerly occurred throughout Key Largo, Florida, in mature tropical hammock-type forest. They are now restricted to an area northeast of where U.S. Highway 1 enters the Key from the mainland. Both species have been artificially introduced on Lignum Vitae Key, a much smaller island southwest of Key Largo.

On Key Largo, destruction of native tropical forest for commercial and residential development has already eliminated the woodrat and cotton mouse from the southern part of the island. Planned construction of a fresh-water pipeline from the mainland through northern Key Largo would contribute to intensive development in the area and the probable loss of the last significant blocks of suitable habitat for both species—and therefore to possible extinction. Even without the pipeline, the habitat is limited to only a few hundred acres, leaving the woodrat and cotton mouse vulnerable to various environmental disruptions. The Service is now assembling supporting information to determine if the Key Largo woodrat and Key Largo cotton mouse warrant a proposal to be listed and have Critical Habitat determined.

Threatened Status Sought for Gypsum Wild Buckwheat

The Service has proposed to list gypsum wild buckwheat (*Eriogonum gypsophilum*) as a Threatened species and to determine its Critical Habitat (F.R. 7/25/80).

A member of the knotweed family,

(Polygonaceae), this small, erect, herbaceous perennial, measuring about 8 inches high, is restricted to gypsum soils. The plant's entire range is limited to a 130-acre area in the Seven Rivers Hills of Eddy County, New Mexico, at elevations from 3,290 to 3,450 feet. The area occupied by *Eriogonum gypsophilum* is managed by the Bureau of Land Management (BLM) and the Water and Power Resources Service. The area proposed as Critical Habitat—semi-arid with an average annual precipitation of 14 inches—is on land administered entirely by BLM.

Historically, the species has been known from this one locality for nearly 70 years. Construction of U.S. Highway 285 reduced the eastern portion of the plant's range. Other actions which pose threats to the species are increased grazing, off-road vehicle use, and the proposed Brantley Dam project. According to the Environmental Statement prepared on the project, the dam itself is expected to have only a minor impact on the plant. The lowest elevation at which the plants are estimated to occur is 3,290 feet, 10 feet above the hypothetical project flood level of the dam. If a flood should occur above this level, it should be of very short duration and is predicted to be harmless unless the plants are in flower, in which case reduced seed set would be expected.

It is possible that the stability of the gypsum may be affected near the reservoir, as it has been on the east side of Lake McMillan where slumping of gypsum bluffs has occurred. This could result in several hundred plants out of an estimated population of 2,800 being affected by new patterns of erosion and changes in microhabitat. The Water and Power Resources Service believes that the plants and the dam can co-exist and note that the plant's well-being has been included in the project's planning process. They also point out that the Brantley Dam has been relocated south-southwest of the closest population of this species.

A public meeting on this proposal was held on August 27, 1980. Comments from the public must be received by September 23, 1980, and should be sent to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

Todsens Pennyroyal Proposed As Endangered

Todsens Pennyroyal (*Hedeoma todsenii*), a native plant of New Mexico, has been proposed by the Service for listing as an Endangered Species with Critical Habitat. (F.R. 7/25/80). A member of the mint family (Lamiaceae), Todsens pennyroyal occurs in only two known populations on steep, gravely gypsum limestone on the White Sands Missile Range in Sierra County.

First discovered in 1978, Todsens pennyroyal is a perennial herb measuring 4-8 inches in height and is somewhat woody at the base. Its orange-red flowers are solitary along the stem and are about 2 inches long.

The two populations of this plant number about 750 individuals. The reproductive potential, as measured by seed set, is low with an average seed yield of 0.22 seeds per flower.

The remoteness of the two populations and the restricted nature of the White Sands Missile Range provide the species with considerable protection. However, the fragile habitat and small number of individuals leaves the species extremely vulnerable and in need of protection. It is unlikely that the plants would be hit by a missile, but even minor changes in the usage of its protected canyons could potentially threaten the continued existence of the species. Construction activities or increased ground traffic in the Critical Habitat could jeopardize the species' habitat without proper planning for its protection.

Critical Habitat for Todsens pennyroyal includes the entire area in New Mexico where the species is known to occur. This area encompasses 2 square kilometers of the White Sands Missile Range, which is administered by the Department of the Army.

A public meeting was held on this proposed rule on August 26, 1980. Comments are solicited from the public and must be received by September 23, 1980. Address all correspondence to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

PUBLIC MEETINGS/HEARINGS

Due to the often unavoidable short notice in scheduling public meetings and hearings (in compliance with 1978 Amendments to the Endangered Species Act) for certain listing and Critical Habitat proposals, we regret that we cannot always relay adequate notice to our readers. Until further notice, we will attempt to provide available information through this column. Due to space limitations and uncertainty of *Federal Register* publication dates, summaries of pertinent proposed rulemakings may not necessarily accompany meeting notices, but may be included in a subsequent issue of the *Bulletin*.

Species/Action	Affected State(s)	Locations of Meetings/Hearings	Date	Time
Maryland darter: Repro- posed C.H.	MD	Meeting: Dickson Hall, Building 3074, Raritan Ave., Aberdeen Proving Ground	9/30/80	7:00 p.m.
Kangaroo: Proposed com- mercial import E—Endangered T—Threatened C.H.—Critical Habitat		Hearing: Room 8068, Main Interior Dept. Bulding, 18th and C Streets, N.W., Washington, D.C.	9/16/80	9:00 a.m.

PERMANENT PROTECTION AREAS PROPOSED FOR MANATEE

The service has proposed the establishment of three permanent protection areas for the Endangered West Indian manatee (*Trichechus manatus*) in Kings Bay, Crystal River, Florida (F.R. 8/12/80). This proposal follows the emergency establishment of a manatee refuge, in the same area, which was effective January 11 through March 31, 1980 (see the January 1980 BULLETIN).

The manatee, a marine mammal, depends upon warm water sources for survival during the winter months when cold water temperatures prevail. The headwaters of the Crystal River in Kings Bay is one of only six natural warm water areas used by the manatee during the winter months. Over 100 individual manatees have been known to use this area in recent years. The entire Florida manatee population is estimated at 1,000 animals.

Kings Bay is used extensively for recreational activities such as boating, diving, and swimming. One of the main attractions to this area is the presence of manatees. Although some manatees become accustomed to divers and will

actually seek contact with them, most manatees will leave areas associated with human activity.

Under regulations promulgated by the Service (F.R. 10/22/79), manatee protection areas may be established "whenever there is substantial evidence that there is imminent danger of a taking of one or more manatees, and that such action is necessary to prevent such taking." This includes showing that such action is necessary to prevent the harassment of manatees. According to Service personnel, manatees are being harassed to such an extent that their normal use of the warm water areas around the springs at the headwaters of Crystal River is being disrupted. Boating, swimming, and diving (both SCUBA and snorkle diving), may be directly affecting the manatees breeding and calf-rearing activities. Recreational activities also force manatees to use colder waters, subjecting them to cold-related stress and disease.

A description of the three proposed manatee protection areas follows:

(1) Banana Island Sanctuary—This

location is critical to the maintenance of a healthy manatee population in Kings Bay. It is immediately adjacent to the main spring and includes a large secondary warm water spring. The area also contains an abundance of preferred manatee food plants. Diving and boating activities are common in this area. The proposed sanctuary will not include areas, such as the main spring, which are essential for the continuation of certain diving activities. When divers, swimmers, and boaters enter the main spring area, the manatees retreat, usually to the proposed sanctuary.

(2) Sunset Shores Sanctuary—Located directly south of the main spring, this sanctuary includes at least three known secondary warm water springs. All but the most tolerant manatees are forced out of the spring area by intensive waterborne activities, depriving them of this warm water refuge. Designation of this area, as well as the Banana Island site, as a manatee sanctuary, prohibiting all waterborne activity during the winter months, is expected to be beneficial to divers and to manatees. More manatees will be able to remain in the vicinity of the main spring near Banana Island, providing more opportunities for divers to see them.

(The two proposed sanctuaries at Banana Island and Sunset Shores will be designated by posting of signs and a floating line of sealed plastic (PVC) pipe sections. Openings will be provided in the Sunset Shores sanctuary to allow the entry of boats for access by residents. Both sanctuaries will provide access for emergency and law enforcement boats.)

(3) Magnolia Springs Sanctuary—This sanctuary is located in a section of canal within the Springs O'Paradise subdivision in Crystal River. A warm water spring, known as Magnolia Spring or the Alligator Hole, is within the proposed sanctuary. Because of the confines of the canal, there is an increased danger of manatees being struck by boats. Private residents will be allowed access to their property by boats, but will be required to maintain idle speed within the sanctuary.

The area adjacent to Warden Key, which was previously designated as an emergency manatee sanctuary, is not being proposed as a permanent sanctuary because of the absence of any warm water springs.

A public meeting was held on this proposal on August 26, 1980. Comments from the public on this proposal must be received by September 12, 1980. They should be submitted to the Area Manager, Area Office, U.S. Fish and Wildlife Service, 15 North Laura Street, Jacksonville, Florida 32202.

Peregrine on the Rebound

Continued from page 9

began on July 16, and the birds have since flown freely and should soon disperse from the area. (Like all other city-hacked chicks, these birds were equipped with miniature radio transmitters to monitor their movements after fledging until they become fully independent.) Biologists also hope that one of the five males in this troop will mate with the lonely female that has wintered the past 3 years atop the 22-story Virginia National Bank, just across from the Royster Building.

East and West: Efforts Continue

Large-scale propagation efforts will have to be maintained at Cornell's hawk barn, according to the experts, if the peregrine falcon is ever to recover to a stable status.

The original eastern population of about 250 pairs is now considered an unlikely goal, even if the required number of birds are hacked to the wild, as much of the habitat once suitable for the peregrine has been altered. The Service-appointed Eastern Peregrine Falcon Recovery Team hopes, however, that perhaps 100 breeding pairs may be restored to the east coast through cooperative Cornell/Federal/State efforts, ultimately requiring the release of more than 1,000 falcons. (Of the number released thus far, about 30 percent are thought to have survived to breeding age.)

While the major focus has been on restoring this species to the eastern part of the country, other efforts have

BOX SCORE OF SPECIES LISTINGS

Starting with this issue, we will use a new format for presenting listing tallies in the Box Score. As below, a new "Species Total" column indicates the actual number of species represented under the other four categories, rather than the total of the columns. A few species are counted, for example, under both Endangered and Threatened categories, and several are counted as both U.S. and Foreign. Under the new Species Total, however, "double listings" are counted only once.

Category	Endangered		Threatened		* Species Total
	U.S.	Foreign	U.S.	Foreign	
Mammals	32	242	3	20	279
Birds	66	158	3	0	213
Reptiles	13	61	10	4	75
Amphibians	5	8	3	0	16
Fishes	33	15	12	0	56
Snails	2	1	5	0	8
Clams	23	2	0	0	25
Crustaceans	1	0	0	0	1
Insects	7	0	4	1	11
Plants	49	2	7	3	58
TOTAL	231	489	47	28	742

Number of species currently proposed: 59 animals
(6 plants)

Number of Critical Habitats listed: 42

Number of Recovery Teams appointed: 68

Number of Recovery Plans approved: 39

Number of Cooperative Agreements signed with States:

36 (fish & wildlife)

6 (plants)

July 31, 1980

been underway in the western States where some 150 pairs of nesting peregrines still exist (inclusive of the Pacific Coast). A branch of The Peregrine Fund also supported by the Service with sponsorship from the Colorado Department of Natural Resources and other organizations has been set up at Ft. Collins, Colorado, under the management of William A. Burnham. Ornithologists there are concentrating mainly on "stuffing" and "fostering" at active eyries in the hope of bolstering peregrine recovery throughout the Nation.

NEW PUBLICATION

The U.S. Forest Service has published a pamphlet entitled, *The Red-Cockaded Woodpecker: Notes on Life History and Management*. This colorful publication is available free from the Southeastern Forest Experiment Station, P.O. Box 2570, Asheville, North Carolina 28802.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

Beaver Dam Slope Population of the Desert Tortoise Listed as Threatened

Michael Bender

The Service has listed a unique but declining population of the desert tortoise (*Gopherus agassizii*), the Beaver Dam Slope population in Utah, as a Threatened species, and has determined its Critical Habitat (F.R. 8/20/80).

This action was taken because the population continues to decline, primarily as a result of habitat deterioration and overcollection in the past, although these factors reduced numbers to such a point that other threats, such as predation, also may have become significant.

The Beaver Dam Slope population was originally proposed on August 23, 1978, as Endangered, with Critical Habitat, following a petition by Dr. Glenn R. Stewart on behalf of the Desert Tortoise Council. In accordance with the 1978 amendments to the Endangered Species Act, the Critical Habitat portion of the proposal was later withdrawn and repropoed, and a public meeting and hearing were held in St. George, Utah. Because conservation efforts by the Bureau of Land Management could lead to a stabilization of the population, the tortoise was listed as Threatened in the final rule rather than Endangered, but the designated Critical Habitat area was identical to that originally proposed.

Background

The desert tortoise occurs in western Arizona, southern California, southern Nevada, southwestern Utah, and adjacent areas in Mexico. The Service believes that the Beaver Dam Slope tortoises, which inhabit southwestern Washington County, Utah, constitute a

Continued on page 4



The Bureau of Land Management, which administers this Critical Habitat for the desert tortoise (inset above), has already taken steps to reduce overgrazing.

Photo by C. Kenneth Dodd, Jr.

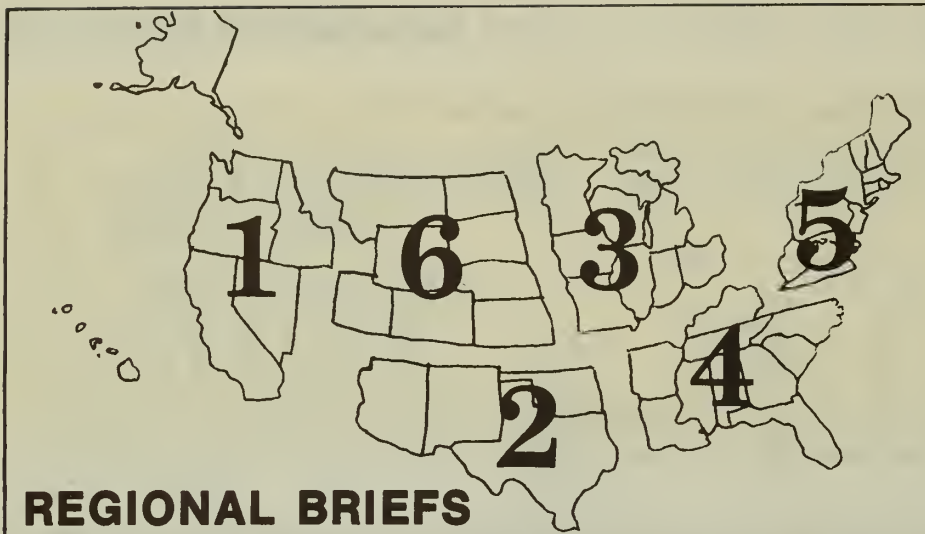
Wildlife Import/Export Licenses Required

Clare Senecal

Persons engaged in business as an importer or exporter of fish or wildlife and their parts or products, are now required to be licensed by the Service (F.R. 8/25/80). Applications for the \$50.00 license must be filed with the Service's Division of Law Enforcement on or before December 31, 1980.

Temporary permission (F.R. 3/5/74) was granted to importers and exporters to continue trade in wildlife until further notice. This permission expires December 31, 1980, unless a person engaged in the wildlife import/export business has filed a complete application, as mentioned above. Any person fil-

Continued on page 3



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of August.

Region 1. Because of destruction of its host plant, *Eriogonum nudum* var. *auriculatum*, prior to the acquisition of Antioch Dunes by the Service, the popu-

lation size of Lange's metalmark butterfly (*Apodemia mormo langei*) was reduced to 200 individuals. The population is not expected to recover for several years; consequently, a captive breeding program is being considered.

A plant thought to be extinct, *Aster vialis*, was rediscovered near Eugene,

Oregon. Botanists had been searching for the plant for several years. The newly discovered population has been fenced by members of the Native Plant Society for protection from grazing.

The Hawaiian Forest Birds Survey for 1980 indicates that distribution of the Endangered Poo-uli (*Melamprosops phaeosoma*) is not restricted on Maui as expected. Also, the crested honeycreeper (*Palmeira dolei*) and Maui parrotbill (*Pseudonestor xanthophrys*) are more abundant than previously thought. They are widespread laterally around Mt. Halieakala, but still appear very restricted in their altitudinal distribution on the mountain.

The Oregon Natural Heritage Program has begun mapping localities of the State's threatened and endangered plants.

Region 2. Guidelines have been developed for the veterinary care of captive wolves being raised for reintroduction to the wild.

Five bald eagles (*Haliaeetus leucocephalus*) have fledged along the Salt and Verde Rivers in Arizona. Also in Arizona, 22 peregrine falcons (*Falco peregrinus anatum*) have fledged.

Region 3. The Service met with the Minnesota Department of Natural Resources to discuss the wolf management plan.

Region 4. TVA biologists, with assistance from the Service, surveyed the Hiwassee and Holston River snail darter (*Percina tanasi*) populations. The Hiwassee survey turned up eight young-of-the-year and 50 adults, as compared to three young-of-the-year and 36 adults last year. Although a total population estimate is not yet available, the overall data suggests that the Hiwassee population is at least stable, and probably still slowly expanding. This year marks the fifth successful spawning season in the Hiwassee since the darters were first transplanted in 1975.

In the Holston River (where the darter was transplanted in early 1979), three adult darters were seen.

An undercover operation by the Service's Law Enforcement Division culminated in the August 25 arrest of five Baldwin County, Alabama, residents for unlawful possession and transportation of alligator hides. Agents seized approximately 400 hides worth about \$40,000 if sold in the legitimate market. All of the alligators came from southern Alabama.

Region 5. Three more eaglets were provided by Region 3 for New York's bald eagle hacking project at the Montezuma National Wildlife Refuge. Once fledged, these birds will bring the year's total to eight.

Region 6. The Colorado River Fishes Recovery Team met and decided that the Colorado Squawfish Recovery Plan will be rewritten in 1981 to update the pre-

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Region 3, Federal Bldg., Fort Snelling, Twin Cities, MN 55111 (612-725-3500); Harvey Nelson, *Regional Director*; Daniel H. Bumgarner, *Assistant Regional Director*; James M. Engel, *Endangered Species Specialist*.

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Alaska Area:** Alaska.

The ENDANGERED SPECIES TECHNICAL BULLETIN is published monthly by the U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

sent plan.

Alaska Area. Preliminary results from this year's peregrine falcon survey-banding efforts indicate a total of 148 fledglings banded.

The Aleutian Canada goose (*Branta canadensis leucopareia*) release efforts on the Aleutian Islands National Wildlife Refuge resulted in a total of 240 geese released. One hundred geese were released on Agattu Island, 120 year-old propagated geese were released on Amchitka Island, and an additional 20

propagated geese were released on Buldir Island. Of the 100 geese released on Agattu Island, 63 (11 adults and 52 goslings) were wild geese trapped on Buldir Island and transplanted prior to reaching flight stage. The additional geese were three pairs and their broods from the Amchitka propagation stock that were allowed to raise their young, and their broods were augmented with additional young. The adult males of the three pairs are wild geese that have made previous migrations to the Califor-

nia wintering grounds.

Also, nine adult males were captured on Buldir Island and will be shipped to the Northern Prairie Research Center. There they will be added to 32 adult males trapped on the California wintering grounds last year. The males will be paired with breeding age females until a firm bond is established. The pairs will then be released on Agattu Island and/or other release sites as breeding pairs in early spring, or in the summer with their broods.

Import/Export Licenses

Continued from page 1

ing an application after December 31, 1980, may not engage in business as an importer or exporter of fish or wildlife until the license is obtained from the Service.

"Along with existing civil and criminal penalties, the potential loss of a business license will be an added deterrent to would-be violators of wildlife law," said Clark R. Bavin, Chief of the Service's Division of Law Enforcement. "A person whose livelihood depends on this license will think twice before embarking on criminal activities that may lead to its revocation."

The final regulation, which requires the above licensing, will also assist in monitoring the international movement of wildlife, and resultant products. This action was taken to implement Section 9(d) of the Endangered Species Act of 1973 (ESA). The Service expects that the amendment of certain import, export, and transport rules contained in this regulation will improve its ability to protect wildlife and to establish and maintain communications with persons involved in wildlife trade.

Section 9(d) of the ESA makes it unlawful for persons to "engage in business as an importer or exporter of fish or

wildlife . . . without first having obtained permission from the Secretary (of the Interior)." This provision will be implemented by the licensing described above and will apply to all wildlife as defined by the Service's regulations and not just to Endangered and Threatened wildlife.

Therefore, in addition to being licensed, persons who import or export species protected by specific laws also must obtain the appropriate Federal and State permits. The licensing system *does not* replace the permit requirements of 50 CFR Part 17 or of any other law or regulation. In effect, the licensing provision represents an overall comprehensive program which monitors, exclusively, the commercial import and export of wildlife and wildlife products.

The comprehensive plan will allow the Service, for the first time, to trace wildlife imports from the supplier to the purchaser or ultimate consignee. Ownership of the wildlife is not a prerequisite to the new licensing requirement and consignees of imported shipments, such as freight forwarders, and taxidermists, are also now required to be licensed.

In addition to being licensed, persons involved in wildlife trade are subject to record keeping, inspection, and reporting requirements. Sanctions are available for noncompliance with these requirements.

Certain persons, generally those already regulated by other governmental agencies, for whom wildlife trade is in-

cidental to their primary business, are exempted from licensing. Also excluded are governmental agencies and non-profit organizations.

Although licensing is not required for the above mentioned groups, the other requirements, including bookkeeping, remain in effect. Record keeping is to be included as a part of whatever business records are presently maintained, and kept for a period of five years.

Information derived from bookkeeping and records inspection will give the Service early warning signals that a particular species is being excessively exploited. Such a process could also uncover other irregularities.

Inspection and clearance procedures adopted in the August regulations continue the past practice, with slight modifications. This procedure has proved both effective and expedient.

No provision for controlling import/export traffic in plants is included in this rule. The Service recognizes some responsibility for providing such rules but wishes to do so at a later date in conjunction with the Department of Agriculture.

Applicants for licenses, and persons simply wanting additional information regarding the August 1980 import/export wildlife regulations, should contact either the U.S. Fish and Wildlife Service, Division of Law Enforcement, Department of the Interior, Washington, D.C. 20240, (202/343-9242) or the Special Agent-in-Charge for their State. Addresses of agents are listed below.

Alaska:
P.O. Box 42597, Anchorage, Alaska
99509 (907-276-3800).

Hawaii, Idaho, Oregon, Washington:
Lloyd 500 Building, Suite 1490,
500 N.E. Multnomah Street,
Portland, Oregon 97232 (503-231-6125).

California and Nevada:
2800 Cottage Way, Room E-1924,
Sacramento, California 95825
(916-484-4748).

Colorado, Kansas, Montana, Nebraska,
North Dakota, South Dakota, Utah, and
Wyoming:
P.O. Box 25486 Denver Federal Center,
Denver, Colorado 80225 (303-234-4612).

Arizona, New Mexico, Oklahoma, and
Texas:
P.O. Box 329, Albuquerque, New
Mexico 87103 (505-766-2091).

Illinois, Indiana, Iowa, Michigan, Minnesota, Mis-
souri, Ohio, and Wisconsin:
P.O. Box 45, Twin Cities, Minnesota
55111 (612-725-3530).

Arkansas, Mississippi, and Louisiana:
1010 Gausz Boulevard, Building 936,
Slidell, Louisiana 70458 (504-225-6471).

Alabama, Florida, Georgia, and Puerto Rico:
P.O. Box 4839, Atlanta, Georgia 30302
(404-221-5872).

Kentucky, North Carolina, South Carolina,
and Tennessee:
P.O. Box CH-66, Nashville, Tennessee
37203 (615-251-5532).

District of Columbia, Delaware, Maryland,
Pennsylvania, Virginia, and West Virginia:
95 Aquahart Road, Glen Burnie, Maryland
21061 (301-761-8033).

New Jersey and New York:
Century Bank Building, 2nd Floor,
700 Rockaway Turnpike, Lawrence,
New York 11559 (212-995-8613).

Connecticut, Maine, Massachusetts, New
Hampshire, Rhode Island, and Vermont:
P.O. Box "E", Newton Corner,
Massachusetts 02158 (617-965-2298).

SERVICE COMPLETES FIRST PLANT EMERGENCY LISTING

For the first time, the Fish and Wildlife Service has issued an emergency rule providing Endangered Species Act protection for 240 days to a plant, the Osgood Mountains milk-vetch (*Astragalus yoder-williamsii*). Endangered status and Critical Habitat are both provided in this action (F.R. 8/13/80). The authority to expand emergency listing to include plants was one of the 1979 amendments to the Endangered Species Act.

Known from eastern Humboldt County, Nevada, and southeast of Black Butte, Owyhee County, Idaho, *Astragalus yoder-williamsii* is found on exposed ridge crests and flat plateaus of decomposed granite gravel or sandy soil from granodiorite parent material, at elevations of 1,890 to 2,230 meters. The Nevada population, in the northern Osgood Mountains, is estimated at about 500 individuals. The Idaho population numbered less than 10 plants in 1977.

Both populations occur on Bureau of Land Management (BLM) land with the Idaho population also found on privately owned land. Because mining claims were made recently at both sites, and assessment work on the claims in Nevada appears imminent, BLM requested this emergency rule in a letter to the Service Director dated July 1, 1980.

The Nevada population lies within mining claims of a private corporation. The claims lie on deposits of tungsten and gold ore. The ore deposits are immediately to the west and north of this population of the species. (Access to the ores on BLM land is regulated by the Mining Law of 1872.) Considerable mining excavations occur within one mile of the population in all directions, a road passes through the population, and past mining assessment cuts have been made in the species' habitat.

BLM has advised our Service that it intends to set aside the Nevada habitat for the species as an Area of Critical Environmental Concern, under the Federal Land Policy and Management Act of 1976 (P.L. 94-579). The Nevada habitat is also designated as Critical Habitat by our Service.

The Idaho population was discovered in June 1977, but no plants were found in the area this June. Because no plants were found, this area was not designated as Critical Habitat.

Endangered status and Critical Habitat shall remain in effect for 240 days, or until April 15, 1981. During that time, the Service anticipates carrying out normal proposed and final rules for the species, so as to provide it with long term protection.

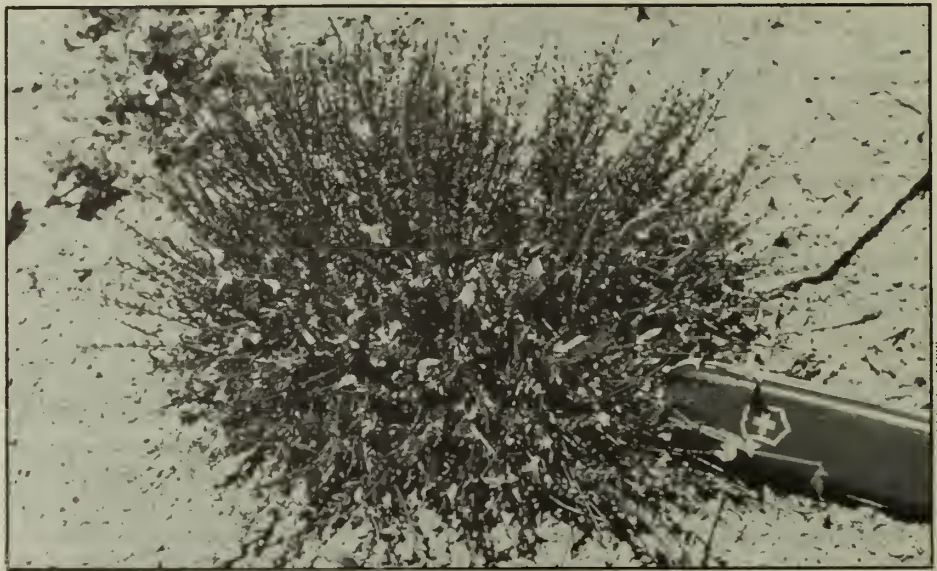


Photo by Michael Yoder-Williams

Astragalus yoder-williamsii is the first plant to be listed under an emergency rule.

Desert Tortoise

Continued from page 1

unique population because they live in a transitional area between northern and southern faunas and, at least in part, are separated from tortoises in other parts of the species' range by mountains and other natural barriers. This population is of particular scientific value because it was surveyed by Drs. Angus Woodbury and Ross Hardy from 1936-1946. Some of the 270 tortoises marked during that period are still alive, making them part of one of the oldest marked, continuously studied vertebrate populations in the world.

According to the Desert Tortoise Council's petition to list the tortoise, the Beaver Dam Slope in Utah at one time may have been habitat for 2,000 tortoises; fewer than 350 are thought to remain. One of the main causes of the decline in this particular area has been habitat deterioration. The slope has had a long history of overgrazing by cattle and sheep, although currently only cattle are using the range. Competition for food between tortoises and livestock may be contributing to the reptile's decline, and cattle may occasionally collapse summer burrows and inadvertently step on young tortoises.

Collection of tortoises is thought to have had a severe impact on the population in the past, especially since females reportedly were collected more often than males. A nearby interstate highway now bypasses the Beaver Dam Slope,

resulting in fewer visitors to the area and less of a collection problem. In addition, Utah State law prohibits the taking of desert tortoises. Predation by coyotes, kit foxes, and bobcats on eggs and young tortoises is thought by many to be another serious threat. Because the population is so depleted, these factors have become more serious.

Protective Measures

Under the Threatened classification, it is illegal to take desert tortoises from the Beaver Dam Slope (except under permit for approved conservation purposes), and to sell them or their products in Interstate or foreign commerce.

The 35 square miles of Critical Habitat designated in Washington County, Utah, is public land administered by the Bureau of Land Management (see the January 1980 BULLETIN for details). A Critical Habitat designation does not create a sanctuary or wilderness area, nor does it represent Federal intent to control purely private land use; rather, it complements the protection already given a species at the time of its listing by requiring Federal agencies to ensure that actions they fund, authorize, or carry out will not likely jeopardize the habitat of the protected species.

In accordance with its responsibility to conserve wildlife, BLM over the years has made adjustments to correct some of the overgrazing problems. In 1965, 50 percent of cattle use was reduced, with another 23 percent proposed (although

this is now in litigation). Future grazing seasons will not extend beyond April 30, which should be helpful to the tortoise, and BLM has proposed the establishment of a 3,040 acre natural study area (also under litigation). By using such management options, it is likely that grazing will not continue to be a major threat to the survival of the tortoise.

Outlook

All States in which desert tortoises occur offer some degree of legal protection. Unfortunately, a rapidly accumulating amount of information indicates that the desert tortoise is continuing to decline throughout much of its known range, not only on the Beaver Dam Slope. In addition to past collection, competition with cattle and sheep, widespread habitat destruction caused by overgrazing, oil, gas, and geothermal leasing, increasing off-road vehicle use on the fragile desert ecosystem may prove to be a serious threat. Accordingly, on August 23, 1978, the Service published a notice of review on the status of the desert tortoise throughout its entire range, requesting comments and information from the involved States, the government of Mexico, and other interested parties. The Service hopes to complete its review this winter, and will then decide if future action under provisions of the Endangered Species Act is warranted.

ILLINOIS MUD TURTLE WITHDRAWN

In compliance with 1978 amendments to the Endangered Species Act, the Service has withdrawn its proposal to list the Illinois mud turtle (*Kinosternon flavescens spooneri*) as Endangered with Critical Habitat (F.R. 8/14/80). The 2-year time limit on proposals established under the amendments has expired for this species, originally proposed in the July 6, 1978, *Federal Register* (see the August 1978 BULLETIN).

The Critical Habitat portion of that proposal was withdrawn on March 6, 1979, because of procedural and substantive changes in making such a determination brought about by the 1978 amendments. Critical Habitat was repropoed on December 7, 1979. During the public comment period on the reproposal, the Service received 131 written comments.

It was clear from these comments that strong differences of opinion existed on whether the Illinois mud turtle was a valid subspecies, whether population estimates were accurate, and whether the

species qualified for listing. The Service decided to convene a panel of outside qualified biologists to examine submitted data and advise the Service as to its considered judgement on the above questions, as well as other issues.

According to the panel, *Kinosternon flavescens spooneri* is a valid subspecies, but a small Nebraska population may belong to this subspecies. In addition to those known from Illinois, Iowa, and Missouri. The panel said that no reliable overall population estimate was available, nor was it possible to determine a population trend. However, the panel felt that the number and quality of available habitats for the Illinois mud turtle was on the decline, and added that the subspecies needed protection, especially in Illinois. The panel did not say whether Federal, State, or local protection would be most appropriate or effective.

Based upon the panel's report, the Service decided that insufficient information was available to justify listing the Illinois mud turtle as a Threatened or Endangered species. A determination on whether or not to repropose the Illinois mud turtle will be made on the basis of findings from future research.

SERVICE LISTS LEON SPRINGS PUPFISH; DETERMINES CRITICAL HABITAT

The only known wild population of the Leon Springs pupfish (*Cyprinodon bovinus*), located near Fort Stockton, Pecos County, Texas, has been determined by the Service to be an Endangered species with Critical Habitat designated (F.R. 8/15/80).

Discovered in 1851 from Leon Springs, the pupfish disappeared from this locality because of radical modification of the spring. By 1938 the species was thought to be extinct. However, it was rediscovered in 1965 from Diamond Y Spring, approximately 9 miles north of Fort Stockton.

The pupfish is small and varies in body color from dusky gray to iridescent blue. Sexes can be readily distinguished by shape, color, and lateral markings. The species occurs in a highly saline habitat and prefers quiet waters near the edges of shallow pools with a minimal growth of vegetation. Male pupfish guard small territories in shallow waters where the females are attracted by courtship behaviors, spawning takes place, and eggs are deposited. The Diamond Y Spring population of Leon Spring pupfish appears to be in good condition with

summer densities reaching more than three fish per square yard in shallow open habitats.

The major threats to this species' survival are pollution from oil spills, diminishing spring flows, and introduced exotic fishes. The present habitat of the pupfish is surrounded by an active oil and gas field. A refinery is located about 500 yards upstream of the main spring head that supplies permanent water to the pupfish habitat. Oil spills have occurred in this area in the past, resulting in considerable fish mortality, however measures have recently been taken to correct this problem.

Groundwater pumping in Pecos County has already dried several springs and has reduced the discharge from Diamond Y and associated springs supporting Leon Creek. Continuation of this activity could destroy the wild Leon Springs pupfish population and its natural habitat.

Hybridization occurred between *Cyprinodon bovinus* and the sheepshead minnow (*Cyprinodon variegatus*) when the latter species was released into Leon Creek in 1974. All exotic sheepshead minnows and hybrids were removed from Diamond Y Spring and Leon Creek by August 1978. However, many areas of the species' habitat are readily accessible and still vulnerable to the release of harmful exotics.

The Service has determined that the entire known range of the Leon Springs pupfish is Critical Habitat. This area includes Diamond Y Spring and a portion of its outflow stream, Leon Creek.

CRITICAL HABITAT PROPOSED FOR MARYLAND DARTER

The Service has proposed to designate two small segments of streams in Harford County, Maryland, as Critical Habitat for the Endangered Maryland darter (*Etheostoma sellare*—F.R. 8/28/80).

The Maryland darter is a member of the freshwater perch family. Like many other darters, this fish inhabits rock crevices and similar shelters in clean, well-oxygenated, swiftly flowing parts of streams. They remain on or near the bottom of this riffle habitat, darting quickly from shelter to shelter. Darters feed mostly on small riffle insects and other invertebrates with habitat requirements similar to their own.

Known to occur only in Deer Creek and Gasheys Run, the Maryland darter was first collected in 1912 from a tributary of Swan Creek, near Havre de

Continued on page 6

Continued from page 5

Grace, Maryland. A single juvenile Maryland darter was discovered in 1962 in Gasheys Run, and an apparently self-sustaining population was found in the lower part of Deer Creek in 1965. Repeated collections from the middle and upper stretches of Deer Creek have failed to yield any Maryland darters.

Details on the species' life history have been hard to come by because of its extreme rarity. Biologists speculate that habitat needs limit the species to base level parts of the stream, or perhaps other fish species have a competitive advantage in the upper reaches. Widespread survey collecting elsewhere in the region now indicates it is unlikely that other breeding populations exist.

Activities which could have an adverse impact on the proposed Critical Habitat include water removal and the introduction of chemicals, organic waste matter, or silt. Only activities carried out, authorized, or funded by a Federal agency would be affected by the Critical Habitat designation.

Proposed as Critical Habitat for the Maryland darter are the riffle zones of Deer Creek downstream from its confluence with Elbow Branch, including adjacent pool areas which may be necessary nursery and/or food supply zones. The area in Gasheys Run (also known as Gasheys Creek) includes both forks from their crossing of Penn Central Railroad to the confluence with Swan Creek.

A public meeting was held on this proposal on September 30, 1980 (as announced in the August 1980 BULLETIN). Comments on this proposed rule must be submitted by November 26, 1980, and should be sent to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

McKittrick Pennyroyal Proposed As Threatened

The Service has proposed Threatened status and a determination of Critical Habitat for the McKittrick pennyroyal (*Hedeoma apiculatum* W. S. Stewart), a native plant of Texas and New Mexico (F.R. 8/15/80). Threatened by habitat destruction from park development on Federal lands (i.e., trail building and facilities siting), and by any major change in land use on privately owned land (where one population of the species occurs), *Hedeoma apiculatum* is estimated to number less than 950 individuals.

A member of the mint family (Labatae), this species is endemic to open limestone rock surfaces and out-

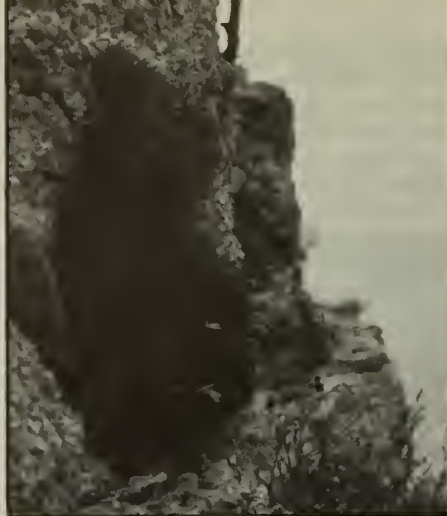


Photo by Robert Irving

Hedeoma apiculatum is subject to disturbance from hikers wandering from trails and climbing over ledges and boulders that support colonies of the species.

crops in canyons and along streamways in the Guadalupe Mountains of Texas and New Mexico, at elevations above 1,600 meters. The plant has no natural protection and is, therefore, extremely vulnerable to disturbance.

Populations of McKittrick pennyroyal in Guadalupe National Park and adjacent Lincoln National Forest are somewhat protected from habitat destruction or modification. Guadalupe National Park has implemented some protective management strategies for the plant. Also, a congressional committee recommended that the Forest Service and the National Park Service cooperate in preserving the natural resources of the North McKittrick Canyon and other canyons in the Lincoln National Forest. However, most of the localities of this species are accessible by hiking trails. Increased hiking traffic could destroy habitat, and because the plants are easily dislodged, the impact of hikers leaving the trail and climbing over the ledges and boulders that support colonies of *Hedeoma apiculatum* could be devastating. Also, high visibility from the trails could increase the possibility of taking.

Because of the restricted distribution and small population numbers, any human pressure on this species may increase the possibility of small populations becoming extinct through natural population fluctuations. Severe floods have also been shown to reduce populations of McKittrick pennyroyal in streambeds.

Critical Habitat for *Hedeoma apiculatum*, as proposed, includes the areas in Texas where the three largest and best known populations of this species occur. Critical Habitat is not being proposed for the smallest population in Guadalupe Mountains National Park, the population in Lincoln National Forest, or the population on private land because they are not well studied or un-

derstood at present.

A public meeting was held on this proposal on August 27, 1980, at Carlsbad, New Mexico.

Comments from the public must be submitted by November 13, 1980, to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

TWO CALIFORNIA BEETLES LISTED AS THREATENED

Two beetles occurring in California have been listed by the Service as Threatened species, with Critical Habitat determined for each (F.R. 8/8/80). The delta green ground beetle (*Elaphrus viridis*) and the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) were each proposed for listing in the August 10, 1978, *Federal Register* (see the September 1978 BULLETIN).

Valley Elderberry Longhorn Beetle

In the notice proposing this beetle as a Threatened species, the common name "California elderberry longhorn beetle" was used. Since this name would more appropriately apply to the nominate coastal subspecies, *Desmocerus californicus californicus*, the Service is now using the common name "valley elderberry longhorn beetle."

The valley elderberry longhorn beetle originally occurred in elderberry (*Sambucus* sp.) thickets in moist valley oak woodland along the margins of the Sacramento and San Joaquin Rivers in the Central Valley of California. Currently, the beetle is known from less than 10 localities in Merced, Sacramento, and Yolo Counties. Agricultural conversion, levee construction, and stream channelization have taken their toll on the species' habitat. Also, in some State and county parks where populations of the beetle occur, the clearing of undergrowth (including elderberry) and planting of lawns has caused further habitat degradation.

Two areas in Sacramento County have been designated as Critical Habitat for the valley elderberry longhorn beetle. An area in Solano County which was proposed as Critical Habitat (F.R. 5/2/80) was not included in the final rulemaking because of a lack of information on the beetle in that area.

Delta Green Ground Beetle

This beetle is known to occur only at two sites in Solano County.

Metallic green and golden in color, this beetle is a predaceous member of the family Carabidae. It is known to oc-

cur only near two vernal pools south of Dixon, Solano County, California. Agricultural practices in this area threaten the species' survival.

The delta green ground beetle was first collected in 1876 from an unknown locality in California and was not rediscovered until 1974. Vernal pools, which are filled by winter rains and dry out by late summer, were once widespread throughout California, but only a few remain. Many of the vernal pools have been lost to river channelization, dam construction, and agricultural conversion of natural habitats. Elimination of the two vernal pools by agricultural conversion or other causes may cause the beetle's extinction. At one of the pools, plowing and land leveling may have already adversely affected the beetle.

Based on suggestions by the California Department of Fish and Game and the State Water Resources Control Board, the Service included in its final Critical Habitat designation a portion of Olcott Lake outside the proposed Critical Habitat boundaries (F.R. 5/2/80) and the elimination of two areas which appear to be unsuitable as habitat for the beetle.



STATUS REVIEW OF 18 FOREIGN REPTILES

The Service is reviewing the status of 18 species of foreign reptiles to determine whether they should be proposed for inclusion on the U.S. List of Endangered and Threatened Wildlife (F.R. 8/15/80). These species, listed in the accompanying table, are declining due to various threats including habitat destruction, the introduction of non-

native predators, exploitation as a human food source (mainly by local people), and overcollection.

Comments and materials relating to the status of these species should be submitted by November 13, 1980, to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

Common name	Scientific name	Range
Serpent Island gecko	<i>Cyrtodactylus serpensinsula</i>	Mauritius
Acklins ground iguana	<i>Cyclura rileyi nuchalis</i>	Bahamas
Allen's Cay Iguana	<i>Cyclura cychlura inornata</i>	Bahamas
Andros Island ground iguana	<i>Cyclura cychlura cychlura</i>	Bahamas
Cuban ground iguana	<i>Cyclura nubila</i>	Cuba, Cayman Islands
Exuma Island Iguana	<i>Cyclura cychlura figginis</i>	Bahamas
Jamaican Iguana	<i>Cyclura collei</i>	Jamaica
Mayaguana iguana	<i>Cyclura carinata bartschi</i>	Bahamas
Turks and Calcos Iguana	<i>Cyclura carinata carinata</i>	Turks and Calcos Islands
Watling Island ground Iguana	<i>Cyclura rileyi rileyi</i>	Bahamas
White Cay ground Iguana	<i>Cyclura rileyi cristata</i>	Bahamas
Gray's monitor lizard	<i>Varanus grayi</i>	Philippines
Hierro giant lizard	<i>Gallotia simonyi</i>	Canary Islands
Aruba island rattlesnake	<i>Crotalus unicolor</i>	Aruba Island
Asiatic box turtle	<i>Cuora trifasciata</i>	Hong Kong, People's Republic of China
Central American river turtle	<i>Dermatemys mawei</i>	Belize, Mexico, Guatemala
Chinese big-headed turtle	<i>Platysternon megacephalum</i>	Hong Kong, People's Republic of China
Lar Valley Viper	<i>Vipera latifii</i>	Iran

The delta green ground beetle is threatened by loss of habitat due to agricultural practices.

CITES PROTECTION BROADENED FOR CACTI

Because of a legal interpretation, the plant family Cactaceae (cactus) will now receive wider protection under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES—F.R. 8/26/80).

The Departments of the Interior and Agriculture, which are responsible (under provisions of the Endangered Species Act and Convention) for enforcement of activities involving the international movement of nonterrestrial plants and terrestrial plants, respectively, have determined that the term "all species in the Americas" for the family Cactaceae, as found in CITES, means all species that are native to the Americas regardless of where physically located. In the past, this term has been thought to refer to certain plants of the family Cactaceae that are physically located in the

Americas. Thus, Convention documentation for import, export, or reexport have not previously been required for cacti unless the plants were moved from a location in the Americas.

According to Department of the Interior botanists, all species of the family Cactaceae (except for certain species of the genus *Rhipsalis*, which is listed separately on Appendix II) are native to the Americas, although some species

have been introduced and established in other parts of the world. Therefore, any plants of the family Cactaceae, including plants previously treated as being excluded from Appendix II, will be required to have appropriate Convention documentation at the time of importation into the United States, or exportation or reexportation from the U.S.

This new policy became effective on September 15, 1980.

OSA ISSUES EXPORT FINDINGS FOR 1979-80

The Service's Office of the Scientific Authority (formerly the Endangered Species Scientific Authority or ESSA) has issued a finding that export of bobcats (*Lynx rufus*) taken from Florida, Massachusetts, and New Mexico, during the 1979-80 season will not be detrimental to the survival of the species (F.R. 9/12/80). Final approval of such exports will not be authorized unless or until a court-ordered injunction is modified or vacated. (The bobcat is listed on Appendix II of the Convention on International

Trade in Endangered Species of Wild Fauna and Flora, for which the Service acts as U.S. Scientific Authority.)

On September 26, 1979, the ESSA published findings favorable to the export of bobcat pelts taken in the 1979-80 season in 35 States and the Navajo Nation. On December 12, 1979, as a result of a suit filed by Defenders of Wildlife, Inc., the U.S. District Court for the District of Columbia issued a Memorandum Opinion and Order which reversed

Continued on page 8

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ESSA's findings for five of those States and parts of two others, thus enjoining export of bobcat pelts legally taken in those States or areas.

In the suit, Defenders of Wildlife asked that export from all jurisdictions approved by the ESSA be prohibited and that the standards used by the ESSA in making its determinations be declared inadequate. The court found that the information used by the ESSA in making its determinations was sufficient in all but seven States. Export of bobcats taken in 1979-80 was enjoined from Florida, Massachusetts, New Mexico, North Dakota, Wisconsin, and parts of Oregon and Texas. The court did not find that the standards used by the ESSA were inadequate, but that the available information from these seven particular States was inadequate to support the ESSA findings.

Further, the court's decision only prohibits international export of pelts taken in the affected States and does not prohibit hunting, trapping, or commerce in the species within the United States, including the seven affected States.

Three of the affected States, Florida, Massachusetts, and New Mexico, have submitted additional biological and management information to the Service, and have asked for a new finding of no detriment to the species based on this additional information. This finding has as a condition that pelts are clearly identified as to State of origin and season of taking, including tagging according to standards and conditions previously established by the Service.

BOX SCORE OF SPECIES LISTINGS

Category	Endangered		Threatened		Species Total
	U.S.	Foreign	U.S.	Foreign	
Mammals	32	242	3	20	279
Birds	66	159	3	0	214
Reptiles	13	61	10	4	75
Amphibians	5	8	3	0	16
Fishes	34	15	12	0	57
Snails	2	1	5	0	8
Clams	23	2	0	0	25
Crustaceans	1	0	0	0	1
Insects	7	0	6	1	13
Plants	50	2	7	3	59
TOTAL	233	490	49	28	747

Number of species currently proposed: 55 animals
7 plants

Number of Critical Habitats listed: 46

Number of Recovery Teams appointed: 68

Number of Recovery Plans approved: 39

Number of Cooperative Agreements signed with States:
36 (fish & wildlife)
6 (plants)

August 31, 1980

HOTLINE NEWS

The Southeastern U.S. Marine Mammal and Sea Turtle Stranding Network has established a toll free "hotline" number in Florida (800-432-6404) for reporting cetacean and sea turtle strandings. To report strandings in the

continental United States outside of Puerto Rico and the U.S. Virgin Islands, call 305-350-7310 (direct dial, reimbursable). Calls involving sea turtles will be forwarded to the appropriate State coordinator.

The previously established manatee "hotline" (800-342-1821) is still in effect.

Our service, the National Marine Fisheries Service, and the University of Miami are cooperating in this effort.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

Coachella Valley Fringe-Toed Lizard Threatened

Michael Bender

The Coachella Valley fringe-toed lizard (*Uma inornata*) has been listed by the Service as a Threatened species, and its Critical Habitat delineated (F.R. 9/25/80).

Background

In September 1978, the Service proposed the Coachella Valley fringe-toed lizard as Threatened with Critical Habitat, based on information from the California Department of Fish and Game, other State officials, and eight professional biologists. Later, to comply with subsequent amendments to the Endangered Species Act, the Critical Habitat portion of the proposal was withdrawn and repropoed after completion of an economic analysis and the addition of new biological information obtained subsequent to the original proposal (see the June 1980 *Technical Bulletin*). A public meeting and hearing were held in Palm Springs, California.

A total of 187 comments were received in response to the original proposal and reproposal of Critical Habitat. Twenty comments were formally presented for the record at the public hearing in Palm Springs. In addition, four petitions were submitted which supported the listing of the Coachella Valley fringe-toed lizard; these petitions contained a total of 105 signatures.

The 4- to 5-inch lizard is found only in the Coachella Valley, Riverside County, California. Named both for its home and the tiny projections on its toes which enable it to run easily over the sand, this

small reptile evades predators by "swimming" beneath the loose surface. The presence of wind-blown sand, therefore, is essential to the lizard's survival.

Agricultural and urban development have reduced the lizard's range from about 324 square miles historically to about 120 square miles today, of which 50-99 are considered suitable habitat. Permanent human residents in Coachella Valley, which numbered

about 12,000 in 1942, currently exceed 100,000, and are projected to reach up to 164,000 by 1990. (Seasonal residents may add another 40 percent or more to the current total.) At present, however, none of the lizard's habitat has been permanently preserved, and zoning plans indicate that all of its remaining range could eventually be developed.

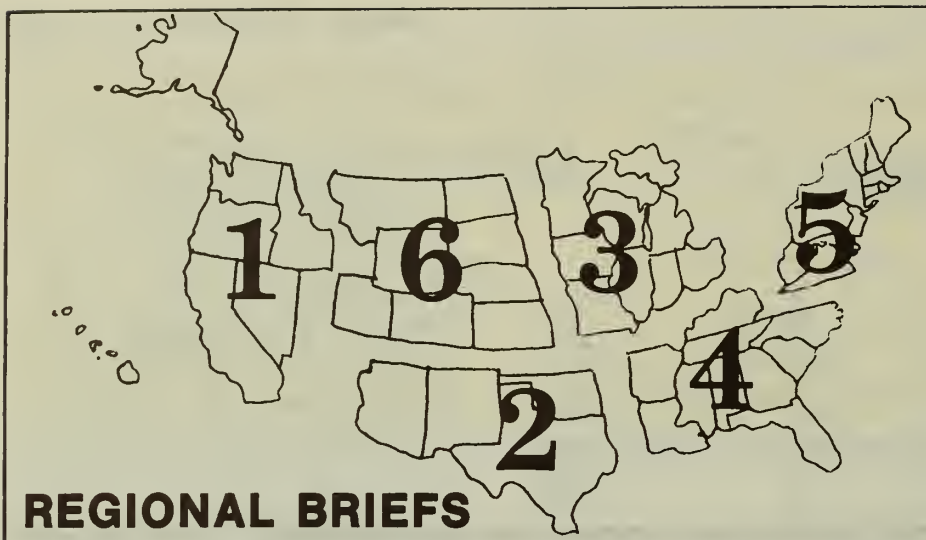
The habitat is further threatened by an invasion of Russian thistle, an intro-

Continued on page 3



The tiny Coachella Valley fringe-toed lizard has been listed as threatened.

Photo by C. Kenneth Dodd, Jr.



REGIONAL BRIEFS

Endangered Species Program regional staffers have reported the following activities for the month of September.

Region 1. The single known population of *Stephanomeria malheurensis* has

been reduced to less than 12 plants according to a field report. The plant occurs south of Burns, Oregon.

In an effort to increase input from the botanical community in the listing process for plants, Technical Review Panels

made up of botanists will review the status of plants in Oregon, Nevada, Idaho, and Washington, and provide data to the Regional Office.

Region 2. A draft management plan has been developed for the aquatic habitats of San Bernadino Ranch in southeastern Arizona.

An *ad hoc* razorback sucker (*Xyrauchen texanus*) group met, and will circulate a draft management plan for updating.

Region 3. A meeting of regional Endangered Species Coordinators was held, with all States participating. Priorities were set for fiscal year 1981.

Regional staffers met with the Indiana/Gray Bat Recovery Team to discuss the species' status.

A two-part poster of Fresh-Water Mussels of the Upper Mississippi River, developed in conjunction with the Army Corps of Engineers, is available from the region on a limited basis.

Region 4. Presumed extinct for 23 years, the Smoky madtom (*Noturus baileyi*) was recently rediscovered in Citico Creek in the Cherokee National Forest in Tennessee. The fish was first discovered in nearby Abrams Creek in 1957, during preparations for the impoundment of Chilhowee Reservoir. Filling of the reservoir submerged lower Abrams Creek, destroying any possibility for survival of the species within the original area of collection. The Service will attempt to gain additional information on the status of the newly discovered population.

The Service has issued a contract for providing information on the feeding habits and movements of the Hobe Sound-Riviera Beach manatee (*Trichechus manatus*) population. Data is specifically being sought on the location and value of grassbeds as feeding areas and methods for their conservation.

Region 5. Rhode Island has signed Cooperative Agreements with our Service for conservation of Endangered fish and wildlife, and plants. The State may now receive two-thirds matching funds from our Service.

Region 6. A Cooperative Agreement for plants was signed by the Colorado Department of Natural Resources and the Service.

U.S. Fish and Wildlife Service Washington, D.C. 20240

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Alaska Area:** Alaska.

The ENDANGERED SPECIES TECHNICAL BULLETIN is published monthly by the U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

CORRECTION

Credit for the photograph of the California condor chick on page 3 of the July 1980 BULLETIN should have been given to Tupper Ansel Blake. We regret the error.

Fringe-Toed Lizard

Continued from page 1

duced shrub that is spreading throughout the West, and by stands of Tamarisk trees planted as windbreaks. Both plants are stabilizing sand deposits. Increasing use of off-road vehicles is yet another danger to the fragile desert ecosystem.

Protective Measures

Under the threatened classification, it is illegal to take Coachella Valley fringe-toed lizards (except under permit for approved conservation purposes), and to sell them in interstate or foreign commerce. The lizard is also protected under California's endangered species legislation.

About 12,000 acres (18.5 square miles), which include both the areas of highest lizard concentration and a source of blow sand, have been designated Critical Habitat. Such a determination does not create a sanctuary or wilderness area, nor does it represent Federal intent to control purely private land use; rather, it complements the protection already given a species at the time of its listing by requiring Federal agencies to ensure that actions they fund, authorize, or carry out will not likely jeopardize the habitat of the protected species.

A Critical Habitat designation will not necessarily block flood and blow sand control, a major concern of Valley residents. Close consultation between project sponsoring agencies and the Service often averts conflicts through mitigation or design modifications. The Service will cooperate with other Federal agencies to minimize any impacts on local residents, and to maintain the lizard as a viable part of the fauna of the Coachella Valley.

Although almost none of the Critical Habitat is currently under Federal protection, the Bureau of Land Management is negotiating with several landowners in the area for possible land exchanges. One corporation alone, Dart Industries, is expected to exchange approximately 20,000 acres in the Coachella Valley, including 5,000 acres of Critical Habitat. In addition, listing the lizard as a Threatened species makes it possible for the Service to negotiate for land acquisition with money from the Land and Water Conservation Fund as part of a multi-faceted recovery plan to be prepared on behalf of the lizard. This property could then be preserved from future development, and managed instead for the lizard's needs.

ENDANGERED HUMPBAC CHUB RANGE EXTENSION DOCUMENTED

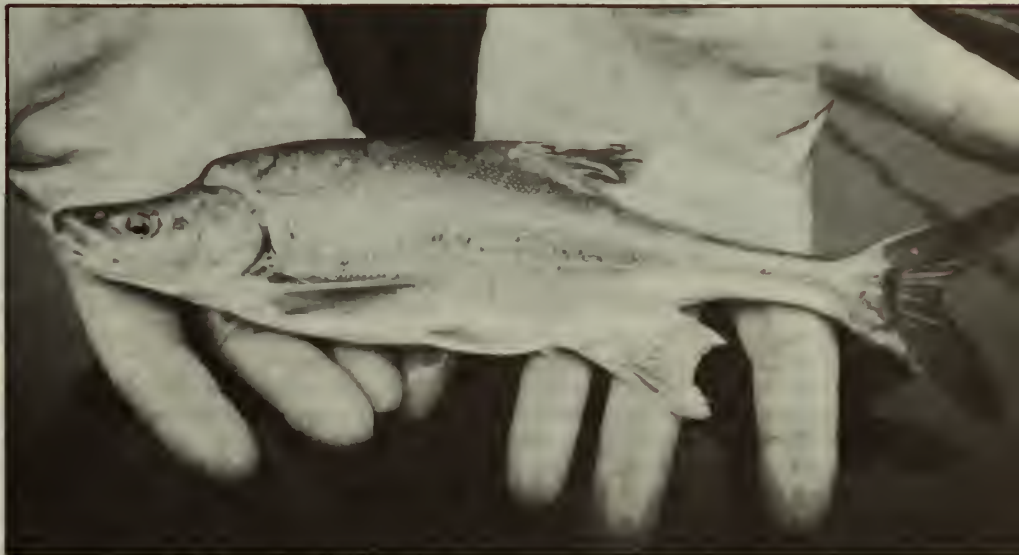
In late August, Colorado Division of Wildlife and U.S. Fish and Wildlife Service biologists collected a single humpback chub (*Gila cypha*) in the Yampa River in northwest Colorado. Until now, the species was known to be present in Colorado only in the mainstream of the Colorado River a short distance east of the State line. It had apparently disappeared from the Yampa and Green Rivers following the closure of Flaming Gorge Dam in 1962.

The specimen was collected in a gill net in an isolated area known as Cross Mountain Canyon, a short distance upstream from Dinosaur National Monument. The specimen, which was released in good condition, measured approximately 10½ inches (267 mm)

and was probably between 4 and 5 years old. [Captured in the same net was an Endangered Colorado squawfish (*Ptychocheilus lucius*).]

The presence of the Endangered humpback chub in Cross Mountain Canyon was suggested two years ago from a fisherman's report. Habitat conditions in the area have been found to be similar in nature to the other few remaining areas where this rare fish is still present. This capture suggests the possibility that Cross Mountain Canyon, a largely unmodified section of the Yampa River, may serve as a natural refuge for this declining species.

The Colorado Division of Wildlife will begin intensive efforts to determine the size and natural history of any potential humpback chub population in this area.



This humpback chub is the first specimen found in the Yampa River since the closing of Flaming Gorge Dam in 1962.

Photo by Charles Haynes

NMFS Establishes Sea Turtle Resuscitation Procedures

The National Marine Fisheries Service (NMFS) has established emergency regulations to modify procedures for resuscitating threatened sea turtles (F.R. 10/7/80). These regulations will remain in effect for 240 days from the date of publication in the *Federal Register*, unless they are extended through normal rulemaking procedures before the 240-day period is over.

Under procedures established in 1979 in 50 CFR 227.72 (e) (1) (i), the resuscitation technique for a comatose turtle incidentally caught in commercial fishing

operations was to turn it on its back and pump the breastplate by hand or foot. The emergency regulations allow for an alternate resuscitation technique, relocation of turtles to non-shrimping areas, and a method of releasing turtles from vessels.

According to NMFS, the emergency regulations are necessary to mitigate sea turtle losses which occur when the turtles are caught in shrimp trawls. This past summer, approximately 1,850 sea turtle carcasses were reportedly

Continued on page 4

NMFS Establishes Sea Turtle Resuscitation Procedures

Continued from page 3

washed ashore on southeast U.S. beaches. These incidents prompted a meeting of conservationists, shrimp industry representatives, and State and NMFS officials in Charleston, South Carolina, on September 18, 1980. The group agreed that the procedures for resuscitating sea turtles caught in trawls needed to be broadened.

Specifically, the emergency regulations state that specimens caught in trawls must be handled with due care to prevent injury to live specimens, observed briefly for activity, and returned to the water according to these procedures:

(1) Sea turtles that are unquestionably dead or actively moving must be released over the stern of the boat. They must be released only when trawls are not in use, when the engine gears are in neutral, and in areas where they are unlikely to be recaptured or injured by vessels.

(2) For sea turtles that are comatose or inactive but not unquestionably dead, resuscitation must be attempted by either (a) placing the turtle on its back (carapace) and pumping its breastplate (plastron) with hand or foot, or (b) placing the turtle on its breastplate and elevating its hindquarter several inches for a period of 1 to 24 hours. The amount of elevation depends on the size of the turtle; greater elevations are needed for larger turtles.

Sea turtles being resuscitated must be kept wet or moist. If they revive and become active, the turtles must be returned to the water in the manner described above. Similarly, if they fail to move within several hours (up to 24 if possible) they must be released in the same way.

Written comments on the desirability of extending or modifying these regulations must be received on or before December 8, 1980. They should be sent to the Regional Director, National Marine Fisheries Service, 9450 Koger Boulevard, St. Petersburg, Florida 33702.

—Rulemaking Actions—

September 1980

ROBBINS' CINQUEFOIL ENDANGERED

Robbins' cinquefoil (*Potentilla robbinsiana*), a plant occurring in New Hampshire only on land administered by the U.S. Forest Service, has been listed by the Fish and Wildlife Service as Endangered with Critical Habitat (F.R. 9/17/80).

A member of the rose family (Rosaceae), *Potentilla robbinsiana* historically occurred in alpine areas of New Hampshire and Vermont. Survival of the plant and its habitat are being threatened by trampling and natural factors.

Robbins' cinquefoil was part of a proposed rule (F.R. 6/16/76) which was subsequently withdrawn (F.R. 12/10/79) in accordance with 1978 amendments to the Endangered Species Act. The plant was repropoed, with Critical Habitat included for the first time, on March 24, 1980.

Historically, this species has been known from two locales in the White Mountains of New Hampshire, and one locale in Vermont. Currently, the species is known from only one locale in New Hampshire, where it has been severely impacted by man.

Located along the Appalachian Trail in the Presidential Range of the White Mountains, the area now occupied by Robbin's cinquefoil is about one-fourth the territory occupied by this species in 1934. Expansion of the trail for a bridle path and widening of the hiker travel zone at this site have greatly reduced the population. The plant was found on either side of the trail as recently as 1965, but by 1972 it was totally absent from the west side. Along the east side, most plants within 8 meters of the trail have been destroyed.

The other New Hampshire location where the plant was once known to occur was on the Franconia Ridge of the White Mountains. The two populations that occurred there are now thought to have been extirpated.

The major cause for the decline at both New Hampshire locations has been hiker traffic. The nearly barren, fell-field habitat of Robbins' cinquefoil offers no obstacle to hikers wandering off the trail, to groups walking abreast, or to illegal campers. Hiking causes shifting and dislodging of the stony, pavement-like surface. Once this surface is disturbed, the loosened soil is blown or washed away. These fragile alpine habitats and plant communities take many years to recover from this type of disturbance.

Another threat to the species is over-collection, which has been suggested as part of the probable cause for the extirpation of the species at one of the Franconia sites.

Natural factors also play a role in plant mortality. Because of the harsh climate above timberline, only 40 percent of the seedlings survive each year, and during the first few years after germination, the mortality rate of the plants is very high. Frost heaving during the spring and fall is the most frequent natural cause of plant death. Many seedlings also die during the hot, dry periods from what is believed to be drought stress.

Critical Habitat for Robbins' cinquefoil has been determined to include the area in New Hampshire where the species currently occurs, a strip of land 4,066 feet long and 450 feet wide.

Our Service, the Forest Service, the Appalachian Mountain Club, and local botanists are cooperating in a study to determine if and how the Crawford Path should be relocated to protect the Robbins' cinquefoil. The Forest Service is also conducting studies to determine which areas are most suitable for transplanting.

PHACELIA FORMOSULA PROPOSED AS ENDANGERED

Phacelia formosula, a plant occurring at only one known location in Colorado, has been proposed by the Service as an Endangered species (F.R. 9/2/80). A member of the waterleaf family (Hydrophyllaceae), *Phacelia formosula* is threatened by habitat destruction from motorcycle traffic on the Jackson County-owned portion of the habitat.

On July 25, 1980, a field survey of the plant's habitat indicated that despite excellent conditions this growing season, only 117 mature specimens and 3 seedlings were found in four small patches. These individuals were localized on a sandstone bluff above the Michigan River, the only known location of *Phacelia formosula* since its discovery in 1918.

This species' limited habitat (about 1/4 mile of the sandstone bluff) is being destroyed because of heavy use by off-road motorcyclists. There are no obstacles to motorcyclists, subjecting the fragile habitat to erosion from continual disturbance.



Robbins' cinquefoil has declined primarily from habitat disturbance caused by hiker traffic.

Phacelia formosula was originally proposed for listing on July 16, 1976, but was subsequently withdrawn on December 10, 1979, along with other proposals which had expired. The Service now repropose this species based on sufficient new information which indicates that *Phacelia formosula* is in danger of extinction.

Critical Habitat is not being proposed for the species at this time because publication of Critical Habitat maps would make the species more vulnerable to taking and vandalism, activities not directly prohibited for plants by the Endangered Species Act of 1973, as amended.

Comments on this proposal were due on November 3, 1980.

Service Accepts Petition to Delist Merriam's Montezuma Quail

The Service has accepted a petition to remove the Merriam's Montezuma quail (*Cyrtonyx montezumae merriami*) from the List of Endangered and Threatened

Wildlife (F.R. 9/26/80). This petition, submitted by Mr. Jerome J. Pratt of Sierra Vista, Arizona, was supported with substantial evidence as determined by the Service Director.

Under regulations implementing Section 4 of the Endangered Species Act (F.R. 2/27/80), a species may be removed from the U.S. List based on the best available data indicating either its (1) extinction, (2) recovery, or (3) a finding that original data for classification were in error.

Merriam's Montezuma quail was described in 1897 from a single male specimen from Mount Orizaba, State of Vera Cruz, Mexico. A taxonomic review of this quail concluded that the single type specimen represented an uncommon plumage pattern found in specimens from nearby localities. Also, the type locality is in the narrow zone of intergradation between two well recognized subspecies, *C. m. montezumae* and *C. m. sallei*. No other series of specimens from the general area of Mount Orizaba is known.

Merriam's Montezuma quail was listed in the original Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, but was subsequently removed at

the March 1979 Conference of the Parties for the same reasons expressed in the Pratt petition: the unique type specimen does not represent a recognized subspecies (or any higher taxonomic group) or a distinct geographic population of a vertebrate. Therefore, it no longer meets the definition of a "species."

The public is invited to submit data or other relevant information to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240 by November 25, 1980. An additional comment period will be provided for any proposed rule.

'EWA PLAINS 'AKOKO PROPOSED AS ENDANGERED

The Service has proposed a native Hawaiian shrub, the 'Ewa Plains 'akoko (*Euphorbia skottsbergii* var. *kalaeloana*), for listing as an Endangered species. Development of dockside facilities in connection with the construction of a

Continued on page 6

'EWA PLAINS' AKOKO

Continued from page 5

proposed deep-draft harbor poses the principal danger to the existence of this taxon, the only known survivor of three plant taxa originally endemic to the 'Ewa Plains, Oahu, Hawaii.

Another variety of the same species, *Euphorbia skottsbergii* var. *skottsbergii*, which formerly was found closer to the shoreline in the same area, was last seen in 1932 and is presumed extinct.

The 'Ewa Plains 'akoko was previously proposed for Endangered status on June 16, 1976, along with approximately 1,700 other plant species which were identified in a petition prepared by the Smithsonian Institution, although it was considered extinct at the time. This present proposal is based on information available at the time of the 1976 proposal and information gathered between then and the time of withdrawal (F.R. 12/10/79), as well as significant new information.

The exact natural range of this plant is unknown, but it probably did not exceed beyond the coralline plains of the 'Ewa area. Loss of native habitat in this area, which began with polynesian settlement of the islands, has been so thorough that no predominately native habitat can be said to be present any longer.

Another factor threatening the survival of the species has been competition from aggressive weedy species that now dominate vegetation in the area. It is also possible that decline of native pollinating insects has affected the 'akoko's reproductive success.

Although the species survives in non-native vegetation, the greatly altered ecosystem in which it occurs cannot reasonably be said to be essential to its conservation and probably is incapable of conversion back to anything even approaching its original composition. Therefore, no Critical Habitat has been proposed.

Comments from the public regarding this proposed rule were due by November 3, 1980.



Photo by Irene H. Stuckey

Isotria medeoloides, one of the rarest orchids in America.

ENDANGERED STATUS SOUGHT FOR SMALL WHORLED POGONIA

Often referred to as the rarest orchid in America, the small whorled pogonia (*Isotria medeoloides*) has been proposed by the Service for listing as an Endangered species. There are only 16 known populations in the eastern United States and Canada numbering 150-175 individual plants.

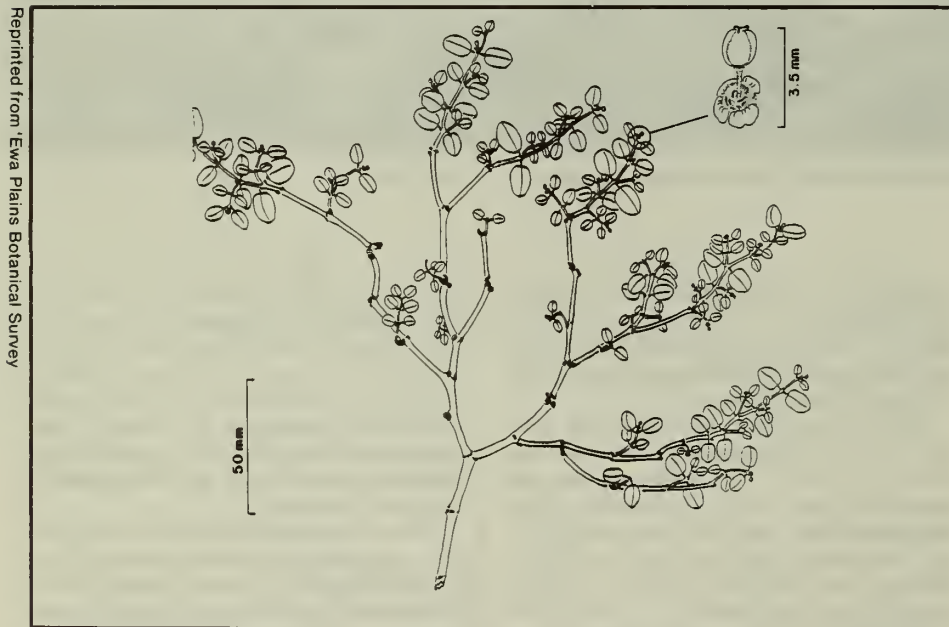
Isotria medeoloides is being threatened by the inadvertent loss of populations to habitat alteration, such as golf courses and housing complexes, and taking by collectors for non-commercial purposes. Today, there are nearly as many, if not more, dried specimens of *Isotria medeoloides* in herbaria than are known to exist in the wild.

Historically, this plant has been known to occur in 49 counties in 17 eastern States and Canada. In 1979, *Isotria medeoloides* was known to occur in only 12 counties in 11 different States and 1 county in Ontario, Canada. The plant is most often associated with relatively open areas in deciduous hardwoods; either beech-birch-maple or oak-hickory. Suitable habitats range from dry, rocky, wooded slopes to moist streambanks.

The Service is not proposing Critical Habitat for this species because of its history of taking and the lack of prohibitions against taking of plants in the Endangered Species Act. Designation of Critical Habitat would only call further attention to existing populations.

Official listing under the Endangered Species Act of 1973, as amended, would allow for the implementation of various conservation and recovery activities aimed at insuring the continued existence of this plant throughout its range.

Comments on this proposal were due November 10, 1980.



Reprinted from 'Ewa Plains Botanical Survey

'Ewa Plains 'akoko

Service Withdraws Callippe Silverspot Butterfly

The proposal to list the Callippe silverspot butterfly (*Speyeria callippe callippe*) as an Endangered species with Critical Habitat has been withdrawn by the Service (F.R. 9/30/80). The Service Director decided not to list this species, which inhabits essentially the same area as the federally protected mission blue butterfly (*Icaricia icarioides missionensis*), at the present time. The Director also determined that insuf-

ficient data was available on the effects of potential housing development in the area occupied by the species. One of the main considerations bearing on the Director's decision was the fact that the County of San Mateo, California, is conducting ongoing studies on the species' biology and on the effects of potential housing development on the species.

When it is available, the Service will consider the information from these studies, as well as other available information, in deciding whether to propose this butterfly as a Threatened or Endangered species.

PROPOSALS FOR 8 SPECIES WITHDRAWN

The Service has withdrawn proposals to list eight arthropod species as either Endangered or Threatened in compliance with 1978 amendments to the Endangered Species Act (F.R. 9/2/80). The proposals to list the Kauai cave wolf spider (*Adelocosa anops*), Kauai cave amphipod (*Spelaeorchestia koloana*), blue-black silverspot butterfly (*Speyeria nokomis nigrocaerulea*), Dakota Skipper butterfly (*Hesperia dacotae*), Great Basin silverspot butterfly (*Speyeria nokomis nokomis*), Karner blue butterfly (*Lycaeides melissa samuelis*), Pawnee montane skipper butterfly (*Hesperia pawnee montana*), and San Francisco tree lupine moth (*Grapholita edwardsiana*) have expired because they were not made final within the prescribed two years from the proposal dates (F.R. 6/16/78 and F.R. 7/3/78).

These species may be repropoed for listing if it is determined that sufficient new information is available to warrant such a proposal.

Devil's River Minnow, Virgin River Chub Proposals Withdrawn

Proposals to list the Devil's River minnow (*Dionda diaboli*) and Virgin River chub (*Gila robusta seminuda*) as Threatened (F.R. 8/15/78) and Endangered (F.R. 8/23/78) species, respectively, have been withdrawn. The Service decided not to list the Devil's River minnow because it was felt that the local affected communities needed more time to fully understand the impact of this proposed listing. Confusion apparently arose because of the public's belief that the Service was unable to offer conclusive data on the numbers and distribution of this fish. Accordingly, it was thought by many members of the public in the locally affected area that the Service had not adequately presented its case for listing the species. Also, the local communities expressed an interest in managing the species, and the Fish and Wildlife Service Director wanted to afford them that opportunity.

The proposed listing action for the Devil's River minnow, occurring in the Devil's River and San Felipe Creek in Val Verde County, Texas, and the Virgin River chub, occurring in the Virgin River in southwest Utah, northwest Arizona, and southern Nevada, has been withdrawn. The Virgin River chub was withdrawn in compliance with 1978 amendments to the Endangered Species Act which require proposals to be withdrawn if they are not made final within

two years of publication in the *Federal Register*. Notice of the withdrawal was published in the September 30, 1980, *Federal Register*.

These species may be repropoed for listing on a determination by the Secretary (of the Interior) that sufficient new information is available to warrant such a proposal.

STATUS REVIEW OF 3 FISHES

The Service is reviewing the status of the Alabama shovelnose sturgeon (*Scaphirhynchus* sp.), frecklebelly madtom (*Noturus munitus*), and freckled darter (*Percina lenticula*) to determine if any, or all of these species should be

proposed for listing as Endangered or Threatened species (F.R. 9/2/80).

All three species generally require the same type of habitat, i.e. sand and/or gravel substrate with moderate to swift current in large, free-flowing rivers.

The Service is seeking the views of the Governors of Alabama, Georgia, Louisiana, Mississippi, and Tennessee, as well as other Federal agencies and interested parties, and is requesting from them any data relative to these species. Information is also solicited on any areas that may qualify for Critical Habitat designation.

Information should be submitted on or before December 1, 1980, to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

PUBLIC MEETINGS/HEARINGS

Due to the often unavoidable short notice in scheduling public meetings and hearings (in compliance with 1978 amendments to the Endangered Species Act) for certain listing and Critical Habitat proposals, we regret that we cannot always relay adequate notice to our readers. Until further notice, we

will attempt to provide available information through this column. Due to space limitations and uncertainty of *Federal Register* publication dates, summaries of pertinent proposed rulemakings may not necessarily accompany meeting notices, but may be included in a subsequent issue of the BULLETIN.

Species/Action	Affected States(s)	Location of Meetings/Hearings	Date	Time
Kentucky cave shrimp: proposed C.H.	KY	Meeting: Downing University Center, Room 305, Western Kentucky University, Bowling Green, KY	12/10/80	7:00 p.m.
Monito gecko: proposed E/C.H.	PR	Meeting: Amphitheater/General Studies, University of Puerto Rico, Mayaguez, PR	12/2/80	10:00 a.m.
		Conference Room, Dept. of Natural Resources, Puerta de Tierra (San Juan), PR	12/3/80	10:00 a.m.
Hawksbill sea turtle: proposed C.H.	PR	Meeting: Amphitheater/General Studies, University of Puerto Rico, Mayaguez, PR	12/2/80	10:00 a.m.
		Conference Room, Dept. of Natural Resources, Puerta de Tierra (San Juan), PR	12/3/80	10:00 a.m.
		Conference Room, Dept. of Natural Resources Headquarters, Isla Culebra, PR	12/4/80	10:00 a.m.

E—Endangered
C.H.—Critical Habitat

NEW PUBLICATIONS

An 854-page *Atlas of North American Freshwater Fishes*, prepared jointly by the North Carolina State Museum of Natural History and the U.S. Fish and Wildlife Service, will be published by the museum. This volume, a collection of accounts of the 777 species known to occur in the fresh waters of Canada and the United States, was written by some of the most active fish researchers in the two nations. Cost is \$20 (\$22.50 Canadian), plus \$3 for postage and handling. Send orders to the North Carolina State Museum of Natural History, P.O. Box 27647, Raleigh, North Carolina 27611, Attention: Fish Atlas.

The *New England State Reports on Rare, Threatened, and Endangered Plants*, prepared by the New England Botanical Club in cooperation with the U.S. Fish and Wildlife Service, are now available through the National Technical Information Service (NTIS). Report order numbers and prices are as follows:

REPORT	ORDER NUMBER	PRICE
New Hampshire	PB 80168933	\$8.00
Massachusetts	PB 80176126	\$7.00
Rhode Island	PB 80176159	\$5.00
Maine	PB 80176167	\$6.00
Connecticut	PB 80176175	\$6.00
Vermont	PB 81106734	\$7.00

Reports may be obtained by writing to the U.S. Department of Commerce, National Technical Information Service, Springfield, Virginia 22161, and including a check payable to "National Technical Information Service."

The Service has published a booklet

BOX SCORE OF SPECIES LISTINGS

Category	Endangered		Threatened		Species Total
	U.S.	Foreign	U.S.	Foreign	
Mammals	32	242	3	20	279
Birds	66	159	3	0	214
Reptiles	13	61	10	4	75
Amphibians	5	8	3	0	16
Fishes	34	15	12	0	57
Snails	2	1	5	0	8
Clams	23	2	0	0	25
Crustaceans	1	0	0	0	1
Insects	7	0	6	1	13
Plants	51	2	7	3	60
TOTAL	234	490	49	28	748

Number of species currently proposed: 44 animals
9 plants

Number of Critical Habitats listed: 47

Number of Recovery Teams appointed: 68

Number of Recovery Plans approved: 39

Number of Cooperative Agreements signed with States:

37 (fish & wildlife)

8 (plants)

September 30, 1980

which examines the status of 39 species and subspecies of amphibians. *Conservation of the Amphibia of the United States: A Review* (U.S. Fish and Wildlife Service Resource Publication 134) was prepared by R. Bruce Bury and C. Kenneth Dodd, Jr. of our Service, and Gary M. Fellers of the National Park Service. Included in the account of each species is a description, range map, discussion of habitat, status, and recommendations for protection. Free copies are available

from the Department of the Interior, U.S. Fish and Wildlife Service, Publications Office, Washington, D.C. 20240.

Vascular Plants of Restricted Range in the Continental Northwest Territories, Canada (Syllogeus No. 23) has been published by the Canadian National Museum of Natural Sciences. This publication describes the distribution of 530 species. Copies are available by mail from the National Museum of Natural Sciences, Ottawa, Canada K1A 0M8.



ENDANGERED SPECIES TECHNICAL BULLETIN



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Snail Darter Discovered at a New Location

Michael Bender

The tiny snail darter (*Percina tanasi*), an Endangered species of perch known historically from only a short section of the Little Tennessee River, has been found in a 10-15 mile stretch of South Chickamauga Creek straddling the Tennessee/Georgia border.

Dr. David Etnier, a University of Tennessee ichthyologist who initially discovered the species, made the new find on November 1 of this year while seining a portion of the creek just inside the Tennessee border, together with graduate student Andy Haines. Several days later, Tennessee Valley Authority (TVA) biologist Charles Saylor accompanied several University of Georgia biologists to a site upstream and across the State line, where more darters were captured and released. Reliable population estimates for South Chickamauga Creek cannot yet be made, but Saylor suggests a minimum of about 200.

It is "extremely unlikely," Dr. Etnier says, that the newly found snail darters are migrants from a Hiwassee River transplant site some 80 miles downstream. The Chickamauga darters are apparently a natural population, and have always existed either in the creek or in nearby streams. They went undetected for a number of years despite an intensive search by TVA, which took samples from at least 134 localities on 35 streams throughout the Tennessee Valley which were thought to contain possible darter habitat. Further surveys will be conducted on Chickamauga and several other streams in the area.

Unfortunately, the snail darter is not yet out of danger. Chickamauga Creek has a long history of pollution problems

from industrial and sewage wastes, resulting in frequent fish kills. In addition, biologists do not yet know whether or not the experimental transplantations of snail darters into the Hiwassee and Holston Rivers will be a long-term success.

The only officially designated Critical Habitat for the snail darter was destroyed when Congress exempted TVA's Tellico Dam Project from the provisions of the Endangered Species Act (see October 1979 *Technical Bulletin*); however, the Service will now be studying Chickamauga Creek for suitability as additional Critical Habitat. According to TVA spokesman Louis Gwin, the agency has no plans for any future projects on the creek.

ABOUT THIS ISSUE

Dear Readers,

As you may have noticed, this issue of the BULLETIN is dated November-December 1980. The reason for this combined issue is twofold—(1) the BULLETIN is presently understaffed, making it difficult to come out with a timely finished product, and (2) November was a slow month for rule-making activities, which means there would have been little to report in a separate December issue. Our next issue will be January 1981, Vol. VI, No. 1.

Have a happy and safe holiday season!

Morey Norkin
Acting Editor



The tiny snail darter, which became the focus of national attention when its presence in the Little Tennessee River temporarily halted construction of the Tellico Dam, was recently discovered at a new location.

Tennessee Valley Authority Photo



Endangered Species Program regional staffers have reported the following activities for the month of October.

Region 3. A \$3,000 reward is being offered for information leading to the arrest and conviction of the person or persons who shot and wounded a young

bald eagle in late October in Pierce County, Wisconsin. The bird was treated for a wing fracture at the University of Minnesota's Raptor Rehabilitation Center, St. Paul. According to Dr. Patrick Redig of the Center, the fracture will take six to eight weeks to heal. When the bird

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Alaska Area:** Alaska.

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Region 4, Richard B. Russell Federal Bldg., 75 Spring St., S.W., Atlanta, GA 30303 (404-221-3583): Kenneth E. Black, *Regional Director*; Harold W. Benson, *Assistant Regional Director*; Alex B. Montgomery, *Endangered Species Specialist*.

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Region 6, P.O. Box 25486, Denver Federal Center, Denver, CO 80225 (303-234-2209); Don W. Minnich, *Regional Director*; Charles E. Lane, *Assistant Regional Director*; Don Rodgers, *Endangered Species Specialist*.

Alaska Area, 1101 E. Tudor Rd., Anchorage, AK 99503 (907-276-3800, ext. 495): Keith M. Schreiner, *Area Director*; Jon Nelson, *Ass't Area Director*; Dan Benfield, *Endangered Species Specialist*.

is fully recovered it will be released in an area near the Mississippi River.

The U.S. Fish and Wildlife Service is paying \$2,500 of the reward money, the remainder is from the National Wildlife Federation.

Region 4. In the absence of any known dusky seaside sparrow (*Ammospiza maritima nigrescens*) females, all plans for a captive breeding program have been cancelled. Another survey for remaining birds will be conducted in 1981, but only one presumed male is currently known to be left in the wild. A cooperative agreement has been signed with the Santa Fe Community College at Gainesville, Florida, to provide captive care for the five males now being held by the Florida Game and Fresh Water Fish Commission.

Service and State of Louisiana personnel have recently completed a cooperative project involving development of an alligator population model to aid in reassessing the status of the alligator in Louisiana and possibly other parts of its range. Use of this method to provide more accurate population estimates should facilitate further delisting of the species.

Region 5. A draft recovery plan for the Virginia round-leaf birch (*Betula uber*) is being reviewed by the Regional Office.

Region 6. In 1980, attempts were made to release 58 American peregrine falcons (*Falco peregrinus anatum*) reared by the Peregrine Fund (Fort Collins, Colorado) into the wild in five western States. Problems with predators at two sites resulted in 52 peregrines being released. It is believed that 43 birds survived to independence.

An *Illustrated Guide to Special Interest Vascular Plants of Wyoming* has been printed. Copies are available from the Regional Office.

Hudsonia Protection Fostered By Local Cooperation

Marshall P. Jones

A successful public meeting and the support of local community leaders contributed to the speedy adoption of a final rule listing mountain golden heather (*Hudsonia montana*) as a Threatened species and designated its Critical Habitat in North Carolina's Pisgah National Forest (F.R. 10/20/80).

In a way, *Hudsonia's* problems seem to symbolize a great irony in today's natural resource conservation—an ever increasing crush of outdoor admirers



Photo by E. Laverne Smith

Fish and Wildlife Service botanists, Nora Murdock and Ben Sanders, examine a population of Hudsonia montana.

who threaten to smother fragile natural areas with their love.

Thus the public support for *Hudsonia*'s listing is especially important. It began with a letter from the Burke County Manager, Kenneth R. Thompson, endorsing the proposal. Subsequently, the County Board of Commissioners, after receiving a visit from Area Office staff to explain the effects of the proposal, adopted a resolution endorsing the action.

The State of North Carolina also gave its support to the listing. At the July 1, 1980, public meeting a representative of the State Department of Agriculture's Plant Protection Program announced that on that very day, the State had adopted its first official list of Endangered and Threatened Plants, and *Hudsonia* was included on it. In a written comment, the State Department of Natural Resources and Community Development's Natural Heritage Program also favored the listing. (Since that time, a Cooperative Agreement for Plants has taken effect between the State and the Service, enhancing the State's capability for undertaking programs for

listed plants.)

Questions about possible closures of areas were brought up at the meeting by the North Carolina Bowhunters Association and a local rock climbing group. This would be a Forest Service decision which the Fish and Wildlife Service could not officially address, but it was pointed out that *Hudsonia* conservation can likely be achieved by trail rerouting and activity restrictions affecting only the actual ledges where the plant grows.

A climbing group suggested it might be able to assist by publicizing the need for protecting the plant in its newsletter. Furthermore, the Outward Bound program, which runs a rock climbing school on leased land near the Critical Habitat, volunteered to assist in monitoring the plant.

The Forest Service has already initiated actions to conserve the plant. Although the Forest Service's official comment on the proposal expressed its view that listing is not necessary at this time, they have no quarrel with the importance of protecting the plant. A monitoring program on Table Rock initiated this spring will hopefully provide data for

development of a management plan. *Hudsonia* is one of many resource management problems the Forest Service must address in attempting to strike a balance between legitimate use and abuse of wilderness area.

Protecting *Hudsonia* may not always be easy, but consensus among affected agencies and individuals is that it is definitely worthwhile. As County Manager Thompson said in his letter,

Since Burke County is the only known locality in which this species grows, protecting it is very important and will help Burke County maintain its uniqueness. The County is proud of its mountainous regions, especially the Table Rock area, and wishes to maintain the area in its natural state. Protecting this plant from possible extinction is in accordance with County policy.

It is gratifying to see that sometimes in the turbulent world of Endangered Species, County, State, and National policy can indeed coincide. Now the real work of insuring a piece of the rock for this tiny wilderness creature can begin.



BLACK-FOOTED FERRET, WHOOPING CRANE, AND BALD EAGLE PROTECTED IN NEBRASKA

Submitted by Ross A. Lock
Nebraska Game and Parks Commission

Various research and management projects are currently underway in Nebraska for the benefit of the federally Endangered bald eagle (*Haliaeetus leucocephalus*), black-footed ferret (*Mustela nigripes*), peregrine falcon (*Falco peregrinus anatum*), and whooping crane (*Grus americana*). The swift fox (*Vulpes velox hebes*), a State endangered species, is also under investigation. (The northern swift fox is listed by the U.S. Fish and Wildlife Service as Endangered in Canada.) The Nebraska program is being conducted under a Cooperative Agreement with the U.S. Fish and Wildlife Service. Under this agreement, Nebraska expects to receive over \$34,000 in matching Federal funds this fiscal year.

Nebraska's endangered species program was initiated in 1971 with the creation of one full-time biologist position. Early efforts, however, were meager due to limited funding derived mainly from hunting license revenues. In addition, the State's endangered species law was far from adequate as it granted the Nebraska Game and Parks Commission the authority to only list species as endangered and to protect them from taking or hunting. While the law permitted the Commission to carry out a program for the conservation of wildlife threatened with extinction, it did not establish a funding base.

In 1975, the Nebraska State Legislature passed the Nongame and Endangered Species Conservation Act that closely resembled the Model Law developed by the International Association of Game, Fish, and Conservation Commissioners. The act not only broadened the authority and responsibility of the Commission with respect to endangered and threatened species and nongame animals deemed in need of conservation, but it authorized general fund tax dollars to be made available to

the Commission. Following enactment of Nebraska's Nongame and Endangered Species Conservation Act, activities in this area have increased and the program has slowly expanded.

Endangered and threatened species lists, along with regulations that specified management policy, were developed by the Commission in late 1975. A publication on the *Endangered and*



Nebraska is an important wintering area for bald eagles.

Threatened Wildlife of Nebraska was also prepared and made available to the public.

In 1977, Nebraska entered into a Cooperative Agreement with the U.S. Fish and Wildlife Service qualifying the State for matching fund assistance. One new nongame and endangered species biologist position was added to the staff during the same year. The State budget was recently increased to allow for two additional staff positions.

The nongame and endangered species staff is performing research, surveys and inventories, and management activities on species listed as endangered or threatened and nongame species determined to be in need of conservation, as well as monitoring the status of other nongame birds, mammals, and reptiles. Most of the intensive research is being conducted through contracts with universities and colleges. Consultation services are also provided to other State departments in Nebraska so that they may utilize their authorities in carrying out programs for the conservation of endangered and threatened species.

Bald Eagle

Nebraska currently ranks 13th among States harboring wintering bald eagles, according to the latest National Wildlife Federation sponsored survey. (A Commission biologist, Greg Wingfield, is the State coordinator for the survey.) Information on the biological characteristics and status of habitat utilized by these birds is being collected. Food habits and behavioral patterns are also being examined. Three areas believed to contain the major bald eagle roosting and feeding sites in the State are under investigation. In an effort to determine roost and feeding area fidelity and other survival requirements, behavior patterns will be studied this winter through observation of color-marked birds. Several eagles will be live-trapped in primary feeding areas for color marking with acrylic paint.

Essential roosting and feeding habitat will be delineated and management plans will be prepared and implemented for those habitats requiring protection.

Black-Footed Ferret

The black-footed ferret, one of the Nation's most Endangered animals, con-



The elusive black-footed ferret continues to be searched for in Nebraska.

tinues to be searched for in Nebraska. For the past seven and one half years, sightings of ferrets have been solicited annually from the public. Over 100 reports have been received to date. Location of all reliable reports are checked for signs of ferrets, and prairie dog towns are spotlighted for ferrets where warranted.

None of the reported sightings have been verified to date. In addition, no sign

or other positive evidence of ferrets has been found in the State since 1949. However, several sightings are reported each year that cannot be discredited.

Peregrine Falcon

Nebraska is one of several western States cooperating in an attempt to re-establish breeding populations of peregrines. In 1979, Nebraska was one of

three States selected to test the reintroduction technique of cross fostering. Through a cooperative agreement with the U.S. Forest Service and the Peregrine Fund, three peregrine falcon nestlings were placed in a prairie falcon nest located on Federal Government land in the northwest part of the State. Five young prairie falcons in the nest were relocated in other active prairie falcon nests. The adult prairie falcons accepted the peregrine nestlings as their own, taking excellent care of them for 10 days. However, on the 11th day, two of the three peregrine nestlings had to be removed following predation on the other by a golden eagle. Reintroduction efforts in 1980 had to be aborted on the day peregrines were to be placed in a prairie falcon nest due to suspected avian predation.

One breeding record is known for the northwestern corner of the State, where old and young peregrines were observed in mid-August 1903, flying about the cliffs. The eyrie used by these birds was not described in the literature. No other evidence of nesting peregrines is known from Nebraska.

Whooping Crane

Nebraska ranks 3rd out of 7 States, found in the whooping crane's primary migration path, in the number of verified sightings recorded since 1960. The 40 verified sightings made in Nebraska over the past 20 years represents approximately 14 percent of the total number recorded for the entire migration path.

Since Nebraska represents one of the major stopover areas for whoopers, efforts are being made to verify all reported observations and to determine biological characteristics and status of habitat utilized. Such information is essential to the proper delineation of Critical Habitat, and to recommending needed habitat protection and enhancement programs.

Protective surveillance of whooping cranes known to be on the ground is provided by Game and Parks Commission personnel. Migrations are closely followed through the U.S. Fish and Wildlife Service monitoring system to assist efforts in determining possible occurrence in the State. This is especially important in preventing exposure of the whoopers to fowl cholera, which occurs each spring in the south central portion of the State, a prime stopover area. Any



Nebraska is one of the major stopover areas in the migration path of the Endangered whooping crane.

Rulemaking Actions

October, 1980

whoopers found on the ground where an epizootic of fowl cholera is occurring are hazed out immediately.

Swift Fox

An in-depth ecological study of the swift fox has been completed recently under a research contract with the University of Nebraska. The study identified food habits, home range, mortality factors, and habitat requirements. This information will be used to prepare a plan that will delineate measures needed to restore these animals to the prairies. Public education will be an essential part of this plan.

Other Studies on Nongame And Endangered Species

The State is concerned about the status of nine species which are listed as threatened in Nebraska: the least tern, mountain plover, southern flying squirrel, lake sturgeon, pallid sturgeon, northern redbelly dace, pearl dace, finescale dace, and the brook stickleback. Investigations are underway to determine their distribution and habitat requirements.

A variety of nongame species, although not listed as endangered or threatened, are receiving considerable attention because of suspected declining populations, small nesting areas subject to decimation, or because an opportunity exists to maintain a population at an existing level, thus preventing the need for future listing. Several raptors are included in this category: the ferruginous hawk, cooper's hawk, prairie falcon, golden eagle, burrowing owl, and barn owl. Other bird species of interest are the piping plover, black tern, Forster's tern, black-crowned night heron, double-crested cormorant, and great blue heron.

The status and occurrence of certain mammals such as the bobcat, black-tailed and white-tailed jackrabbit, red fox, badger, and spotted skunk are being evaluated.

During the next year, Statewide surveys will be initiated on all nongame birds, mammals, reptiles, and amphibians to determine habitat, distribution, and relative abundance. Programs are being developed to acquire natural or unique habitat and to coordinate enhancement and protection of urban bird habitats with cities and towns.

Service Withdraws Proposed Beetles

The Service has withdrawn proposals to list eight North American beetles as Threatened and Endangered species in line with 1978 amendments to the Endangered Species Act (F.R. 10/1/80). The species for which the two-year time limit has expired are Beller's ground beetle (*Agonum belleri*) (Endangered), Sacramento anthicid beetle (*Anthicus sacramento*) (Threatened), globose dune beetle (*Coelus globosus*) (Threatened), San Joaquin dune beetle (*Coelus gracilis*) (Threatened), Majave rabbitbrush longhorn beetle (*Crossidius majavensis majavensis*) (Endangered), Robinson's rain scarab beetle (*Phobetus robinsoni*) (Threatened), Andrews' dune scarab beetle (*Pseudocotalpa andrewsi*) (Threatened), and Giuliani's dune scarab beetle (*Pseudocotalpa giulianii*) (Threatened).

These species were proposed for listing on August 10, 1978, along with the Delta green ground beetle (*Elaphrus viridis*) and the Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) which were determined to be Threatened species with Critical Habitat (F.R. 8/8/80).

Service Proposes Kentucky Cave Shrimp

The service has proposed a blind crustacean, the Kentucky cave shrimp (*Palemonias ganteri*), as an Endangered species with Critical Habitat (F.R. 10/17/80). Known to occur only in the Roaring River passage of the Flint Mammoth Cave System, Mammoth Cave National Park, Edmonson County, Kentucky, this species is threatened by unseasonal flooding of its limited habitat, and also groundwater contamination.

The Kentucky cave shrimp was originally proposed as a Threatened species on January 12, 1977. That proposal was withdrawn on December 10, 1979, in line with 1978 amendments to the Endangered Species Act. The Service has since received a petition to list this species, which it has determined contains sufficient new information to warrant this reproposal.

A member of the family Attyidae, of which three existing species are known from North America north of Mexico, the Kentucky cave shrimp's preferred habitats are pools exposed to seasonal floodings. The species has not been found in recent years in areas where it

was formerly abundant. An impoundment on the Green River resulted in year-round flooding and the elimination of much of the shrimp's former habitats.

On September 1, 1979, a single dead specimen was found in the shrimp pools of the Roaring River passage. Previously, the last find there was recorded in 1967.

Groundwater contamination might also be affecting the species' habitat. Recently, an incident of groundwater contamination caused a kill of crayfish and other animals in part of the cave system.

The proposed Critical Habitat area for the Kentucky cave shrimp is the Roaring River passage of the Flint Mammoth Cave System. This area contains the last preferred habitat of this species, and is the only remaining area where the species is known to occur and all of the physical and biological constituents necessary for its survival can be found.

A public meeting on the proposal was held on December 10, 1980 (see the October 1980 BULLETIN). Comments from the public on this proposal must be received by January 15, 1981. They should be submitted to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

RED LECHWE RECLASSIFIED AS THREATENED

Because its populations are stable or increasing over much of its range, the red lechwe (*Kobus lechwe*) has been reclassified by the Service from Endangered to Threatened status (F.R. 10/1/80).

Although the red lechwe does not appear to be Endangered throughout a significant portion of its range, the Service believes the species still qualifies for Threatened status. Many thousands of square miles of wetlands habitat favored by the red lechwe have been lost because of development, which has been continually increasing in Africa. The species is also threatened by uncontrolled local hunting.

The red lechwe was proposed for reclassification on November 27, 1979. For more information on that proposal and the status of the lechwe see the December 1979 BULLETIN.

Rulemaking Actions
Continued on page 8

MALHEUR WIRE-LETTUCE PROPOSED AS ENDANGERED

Known only from one small population in Harney County, Oregon, Malheur wire-lettuce (*Stephanomeria malheurensis*) has been proposed by the Service as an Endangered species with Critical Habitat (F.R. 10/31/80). The extremely restricted range of this species makes it vulnerable to even small land disturbances in and around its habitat.

The Bureau of Land Management (BLM) administers all of the land supporting *Stephanomeria malheurensis*. It is likely that zeolite mining will occur in the area in the near future since mining claims cover the entire area of the species' habitat as well as all adjacent areas. Although a 160-acre area, which includes the entire population of *Stephanomeria malheurensis*, has been fenced to protect the species from grazing, zeolite is a locatable mineral under mining law.

If this proposed rule should become final, BLM would be responsible for carrying out the intentions of the Endangered Species Act on this land. However, the Mining Law of 1872 may restrict BLM's authority to regulate mining activities of locatable minerals, including zeolite. Successful protection of the species and its habitat will require cooperation between BLM, the private mining interests, and our Service.

Another threat to this plant is the invasion of its habitat by cheat grass (*Bromus pectorum*). The cheat grass invaded the burnt area that resulted from a 1972 fire which swept much of the colony area. Fieldwork during August 1980 showed only a few dozen individuals of *Stephanomeria malheurensis* remaining. A September 1980 report indicated that the plant is threatened with extinction unless immediate action is taken to control the cheat grass invasion.

Critical Habitat is included in this proposal and has been designated to include the 160-acre Scientific Study Area on BLM land, 27 miles south of Burns in Harney County, Oregon. This area includes a buffer zone to protect the species from adverse indirect impacts and is considered essential for the species' conservation.

A public meeting and a public hearing on this proposal were held on November 13 and December 2, 1980, respectively. Comments should be received on or before January 29, 1981. Submit comments or materials to the Regional Director (SE), Department of the Interior, U.S. Fish and Wildlife Service, 500 N.E. Multnomah Street, Suite 1692, Portland, Oregon 97232.

Threatened Status Proposed For Madison Cave Isopod

The Madison Cave isopod (*Antrolana lila*), an eyeless and unpigmented crustacean, has been proposed by the Service to be a Threatened species (F.R. 10/6/80). Found only in three small pools of water in Augusta County, Virginia, the Madison Cave isopod is threatened by vandalism and mercury pollution.

Two of the pools in which the species is found are in Madison Cave, the other is in a nearby fissure. The species is of great scientific interest because of its uniqueness and its relationship to ocean-living members of the same family (*Cirolanidae*).

The very limited habitat of the isopod has been reduced and degraded by unauthorized visitors to Madison Cave. Trash accumulation and siltation in the pools of water have resulted from persons visiting the cave. The owner of the cave has gated the entrance to discourage visitation.

Another factor affecting the species and its habitat is mercury contamination from the nearby South River. There is apparently a subterranean connection between the pools and the river. The original source of the mercury pollution was an E. I. du Pont de Nemours and Company factory at Waynesboro, Virginia.

Critical Habitat has not been proposed for the Madison Cave isopod because of the threat created by visitation to the cave. Publication of a map and precise location of the cave would only increase the incidence of unauthorized visitation.

Comments on this proposal must be received by January 5, 1981, and should be submitted to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

SERVICE PROPOSES PERMANENT PROTECTION FOR BORAX LAKE CHUB

Protected as an Endangered species with Critical Habitat designated under an emergency rule, which expires on January 23, 1981 (F.R. 5/28/80), the Borax Lake chub (*Gila boraxobius*) is now being proposed by the Service for permanent protection (F.R. 10/16/80).

Emergency listing of the Borax Lake chub was initiated because of existing threats to its only known habitat. The fish is found in Borax Lake (a small, 10.2-acre, natural thermal lake), its outflow, and Lower Borax Lake located in the Alvord Basin in Harney County, Oregon.

The chub has become isolated from the surrounding watershed because the lake's perimeter has risen from mineral precipitation. The perched nature of the lake, compared to the surrounding land, makes it extremely susceptible to human disturbance. Alteration of the lake's perimeter is lowering the water level, which adversely affects the chub by decreasing habitat and increasing water temperature.

Another threat to the Borax Lake chub is geothermal development. The entire Alvord Basin is a Known Geothermal Resource Area in which the Bureau of Land Management has already leased rights for geothermal exploration to private oil and geothermal companies. Exploratory drilling could create inter-connecting aquifers or springs, which could result in Borax Lake being drained. Drilling might also disrupt the hot water aquifer feeding the lake, thereby changing the aquifer pressure or temperature.

Critical Habitat is proposed for Borax Lake and the aquatic environments associated with its outflow. Most of the area is owned by the Bureau of Land Management, which (in the event of a final rulemaking) would have to insure that activities it authorizes, funds, or carries out are not likely to jeopardize the continued existence of the Borax Lake chub. BLM will also have to insure that their activities will not result in the destruction or adverse modification of the Critical Habitat.

A public meeting and a public hearing were held on this proposal on November 13 and December 2, 1980, respectively. Comments were due by December 15, 1980.

Threatened Status Proposed For Silverling

The Service proposes the silverling (*Paronychia argyrocoma* var. *albimontana*), a plant occurring in Maine, New Hampshire, and Massachusetts, to be a Threatened species (F.R. 10/27/80). Historically, this plant has been documented from approximately 27 locations in New England since it was first collected in the early 1800's. The plant is currently known to occur at only 13 of these sites.

A member of the carnation family (*Caryophyllaceae*), the silverling is threatened by heavy hiker traffic, over-collecting, a highly restricted range, and small population sizes. In New Hampshire, most of the nine sites where the plant occurs are in the White Mountain National Forest and are heavily used by hikers. Damage has occurred to plants located along trails. Because all of



Photo by Irene M. Storks

Paronychia argyrocoma var. *albimontana*, a proposed *Threatened* species, occurs on the tops of mountains and ledges (generally below 4,000 feet) and along rocky stream shores or on riverside ledges.

the New Hampshire silverling populations range in size from 1 to 60 tufts or individuals (colonies) per population and occupy small areas, they are extremely vulnerable to trampling and natural factors.

In Massachusetts, where a single population of *Paronychia argyrocoma* var. *albimontana* occurs, this plant's numbers have fluctuated since a description of the site in 1945. At that time, 196 colonies of the plant were reported on a small ledge on an island in

the Merrimack River, Essex County. In 1978, 56 colonies were reported at the site. A 1980 census found 104 mature colonies, 93 seedlings, and 10 dead or nearly dead colonies. The cause of this fluctuation is unknown, but it may be due to human disturbance or natural population fluctuations.

Although seven sites have been reported in Maine, only three are known to exist. Little is known about the plant's status in the State.

Collecting of silverlings for scientific

purposes has removed a significant number of plants from the wild. This is a serious threat, as several of the smallest populations consist of only one plant.

Because taking is such a serious threat and the plants occur in open, exposed areas near hiking trails, the Service feels that designation of Critical Habitat would not be in the best interest of the species, but would in fact place the species in greater jeopardy.

Comments on this proposal were due by December 26, 1980.

MONITO GECKO PROPOSED AS ENDANGERED

Known only from Isla Monito in the Commonwealth of Puerto Rico, the Monito gecko (*Sphaerodactylus micropithecus*) has been proposed by the Service as an Endangered species with its Critical Habitat delineated (F.R. 10/22/80).

An extremely rare lizard, only one adult Monito gecko has ever been collected in spite of intensive surveys. An egg was collected at the same time (May 1974) and both specimens were placed in the Florida State Museum. According

to Dr. Howard W. Campbell who, with Dr. Fred G. Thompson, collected the gecko and egg, predation from introduced rats (*Rattus rattus*) may be the major factor contributing to the species' rarity. Dr. Campbell's trip report stated, "No quantitative estimate is available for their numbers, but it should be noted that, at night, one is never out of sight of at least one foraging rat and frequently several will be in sight at any given moment."

Previous surveys of Monito failed to turn up any lizards of the genus *Sphaerodactylus*, which are normally abundant when present. The gecko was described as a distinct species in 1977 and the Monito *Sphaerodactylus* has been difficult to ally taxonomically with any species nearby, including *S. monensis* of Mona Island only 5 kilometers away.

The Service believes that because the Monito gecko is known to occur only on the tiny (300 x 500 meters) Isla Monito, the entire island should be designated as Critical Habitat. If the area were destroyed, the gecko would become extinct. Also, the rat problem is such that the island must be carefully managed to insure the continued existence of the lizard as well as its extensive sea bird colony.

Activities which might be detrimental to the environment of this species and lead to further reduction of its range include using Monito as a target for Naval bombing practice, as was considered in the past, and other types of physical alteration of the island.

Public meetings were held on this proposal in the Commonwealth of Puerto Rico (see the October 1980 BULLETIN).



Photo by C. Kenneth Dodd, Jr.

Proposed as Critical Habitat for the Monito gecko, Isla Monito is the only area where the species is known to occur.

Comments from the public must be received by January 21, 1981, and should be sent to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

PUERTO RICAN BEACHES PROPOSED AS CRITICAL HABITAT FOR HAWKSBILL TURTLE

The Service has proposed to designate Critical Habitat for the hawksbill sea turtle (*Eretmochelys imbricata*) in the Commonwealth of Puerto Rico (F.R. 10/22/80). Protected as an Endangered species since 1970, much hope for the survival and recovery of this species depends upon the maintenance and protection of suitable, undisturbed nesting beaches.

One area included in the proposal, the beaches of Mona Island, was cited as being of major importance as a nesting area for the hawksbill at the World Conference on Sea Turtle Conservation held in November 1979, in Washington, D.C. Designation of Mona Island as Critical Habitat for the species was one recommendation made at the 1979 Conference.

Hawksbill sea turtle populations are apparently declining worldwide because of commercial trade in tortoise-shell items and stuffed specimens, human consumption of eggs or destruction of eggs by predators, and destruction or alteration of nesting beaches. Other threats to the hawksbill include killing for meat (this only happens occasionally because hawksbill meat is considered poisonous in many parts of the world), accidental entanglement in fishing nets, incidental catches in trawls, pollution and destruction of nesting and feeding reefs, and harassment while nesting and swimming.

Critical Habitat for the hawksbill sea turtle in the Commonwealth of Puerto Rico was originally proposed on May 24, 1978. That proposal was withdrawn on March 6, 1979, because of substantive changes made in the requirements for determining Critical Habitat by the Endangered Species Act Amendments of 1978. The areas in the present proposal are essentially the same as those in the original proposal.

Mona Island

Mona Island is owned by the Commonwealth of Puerto Rico and is managed as a Natural Reserve. The island is uninhabited except for Puerto Rico Conservation Rangers who enforce wildlife laws. The entire 7.2 kilometers of

beaches on Mona Island, to a point 150 meters from shore, are proposed as Critical Habitat for the hawksbill sea turtle. Mona Island is already Critical Habitat for the federally-listed yellow-shouldered blackbird (*Agelaius xanthomus*), Mona ground iguana (*Cyclura stejnegeri*), and Mona boa (*Epicrates monensis monensis*).

Culebra Island

The areas proposed as Critical Habitat include nearly all the major sand beaches on the north shore of the island. These areas (Playa Resaca, Playa Brava, and Playa Larga) are currently owned by the U.S. Navy, but are scheduled to be transferred to the Commonwealth of Puerto Rico sometime in 1981. Under draft agreements, the beaches will not be further developed and will be managed by the Commonwealth as marine turtle nesting beaches with numerous conditions on human use and activities.

Isla Culebrita

A part of the National Wildlife Refuge system, this island is uninhabited with virtually no public access. This island may be transferred to the Commonwealth of Puerto Rico, pending Congressional approval, although this has not yet been decided. If transfer is completed, restrictions on human activities would be the same as on Culebra. Critical Habitat would include all beachfront areas on the southwest facing shore, east facing shore, and northwest facing shore from mean high tide inland to a point 150 meters from shore.

Cayo Norte

Cayo Norte is privately owned in two separate parcels. No one presently lives on the island, although there are reportedly some unoccupied dwellings. The beach may be visited occasionally by boaters, but the remoteness of the island makes such visits rare. Critical Habitat would include south beach from mean high tide inland to a point 150 meters from shore.

If published as a final rule, this proposal would require Federal agencies not only to insure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the hawksbill sea turtle, but also requires them to insure their actions are not likely to result in the destruction or adverse modification of their Critical Habitat.

Public meetings on this proposal were held in the Commonwealth of Puerto Rico (see October 1980 BULLETIN). Further comments must be received by January 21, 1981. Comments should be submitted to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

SERVICE ISSUES ALLIGATOR, GINSENG FINDINGS

The Service has issued final findings in favor of the export of American ginseng (*Panax Quinquifolius*) and American alligators (*Alligator mississippiensis*) harvested during the 1980 season (F.R. 10/21/80). Under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), export of wildlife or plants listed in Appendix I or II requires a finding by the Scientific Authority that such exports will not be detrimental to the survival of the species, and Management Authority satisfaction that the wildlife or plants were not obtained in violation of the law.

American Ginseng

Export of wild or artificially propagated 1980 season ginseng has been approved for Arkansas, Georgia, Illinois, Indiana, Iowa, Kentucky, Maryland, Minnesota, Missouri, New York, North Carolina, Ohio, Tennessee, Virginia, West Virginia, and Wisconsin. The Management Authority will approve export of wild or artificially propagated ginseng only from these States because they have the mandatory or voluntary programs necessary to document the source of the plants.

American Alligator

Because of increasing alligator populations in Louisiana and Florida, and because these States have programs to monitor populations and control harvests, the Service has approved alligator exports from these areas. The finding for Louisiana applies to alligators taken in the State during the 1980 commercial harvest season, and in Florida, export is approved under the "nuisance" alligator control program during 1980 and 1981.

Provided that any export of American alligators is in accordance with the Service's regulations (50 CFR 17.42), which require the licensing of foreign buyers and tanners, and provided that hides are properly tagged, there is assurance that their export would not diminish the effectiveness of the CITES in controlling trade in other crocodilians.

Manatee Sancturaries Established in Florida

William Gill

On November 12, 1980, the Service established the first permanent manatee sancturaries (45 FR 74880) under Section 17.108 of 50 CFR Part 17, Subpart J (44 FR 60962) which provides the means for establishing West Indian manatee (*Trichechus manatus*) protection areas (see the November 1979 BULLETIN). The three sancturaries, designated in Kings Bay, Crystal River, Florida, prohibit all waterborne activity within them between November 15 and March 31 of each year. They are known as the Banana Island Sancturaries, Sunset Shores Sancturary, and Magnolia Springs Sancturary. Boat access to residences, boat houses, and boat docks in the sancturaries will be permitted by residents and their authorized guests by obtaining and displaying stickers provided by the Service. They will be required to maintain idle speed within the sancturary.

The regulation which allowed the Service to designate these permanent manatee protection areas also provided for the emergency establishment of such areas. On January 11, 1980, approximately 2 acres adjacent to Warden Key on Kings Bay were established under this emergency provision as a manatee refuge. This designation expired March 31, 1980 (see the January 1980 BULLETIN).

Following the expiration of the emergency designation, the three areas in Kings Bay were proposed as manatee sancturaries (see the August 1980 BULLETIN). The Warden Key area was deleted from the proposal because it

Category	Endangered		Threatened		Species Total
	U.S.	Foreign	U.S.	Foreign	
Mammals	32	241	3	21	279
Birds	66	159	3	0	214
Reptiles	13	61	10	4	75
Amphibians	5	8	3	0	16
Fishes	34	15	12	0	57
Snails	2	1	5	0	8
Clams	23	2	0	0	25
Crustaceans	1	0	0	0	1
Insects	7	0	6	1	13
Plants	51	2	8	3	60
TOTAL	234	489	50	29	750

Number of species currently proposed: 17 animals
10 plants

Number of Critical Habitats listed: 48
Number of Recovery Teams appointed: 68
Number of Recovery Plans approved: 39
Number of Cooperative Agreements signed with States:
37 (fish & wildlife)
8 (plants)

November 30, 1980

lacked a warm water source which limited its effectiveness as a sancturary. The area did, however, effectively demonstrate the need to provide habitat free from disturbance from waterborne activities.

The Banana Island and Sunset Shores Sancturaries are adjacent to, but do not include, the main spring. However, they do include secondary springs. Diving activities will still be allowed at the main spring providing recreational opportunity to observe and interact with those manatees that are tolerant of human presence. The Magnolia Springs Sancturary contains a warm water spring known as Magnolia Spring or "Alligator Hole." This area is located in a section of canal within the Springs O'Paradise subdivision.

The warm springs provide manatees with areas where water temperatures are moderated during cold weather periods. Manatees tend to "congregate" around the warm springs during these critical periods. In an effort to observe and interact with manatees, human activity increases at these manatee "congregations." This disturbance causes manatees to flee these warm spring areas subjecting them to physiological stress and increasing the potential for mortality. Disruption of normal mating or calf rearing behavior may also result.

The sancturaries are intended to provide areas free of disturbance to manatees. Over 100 individuals out of an estimated population of 1,000 animals have been known to use the Kings Bay-Crystal River area.



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240



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Abbreviations:
E=Endangered
T=Threatened
C.H.=Critical Habitat



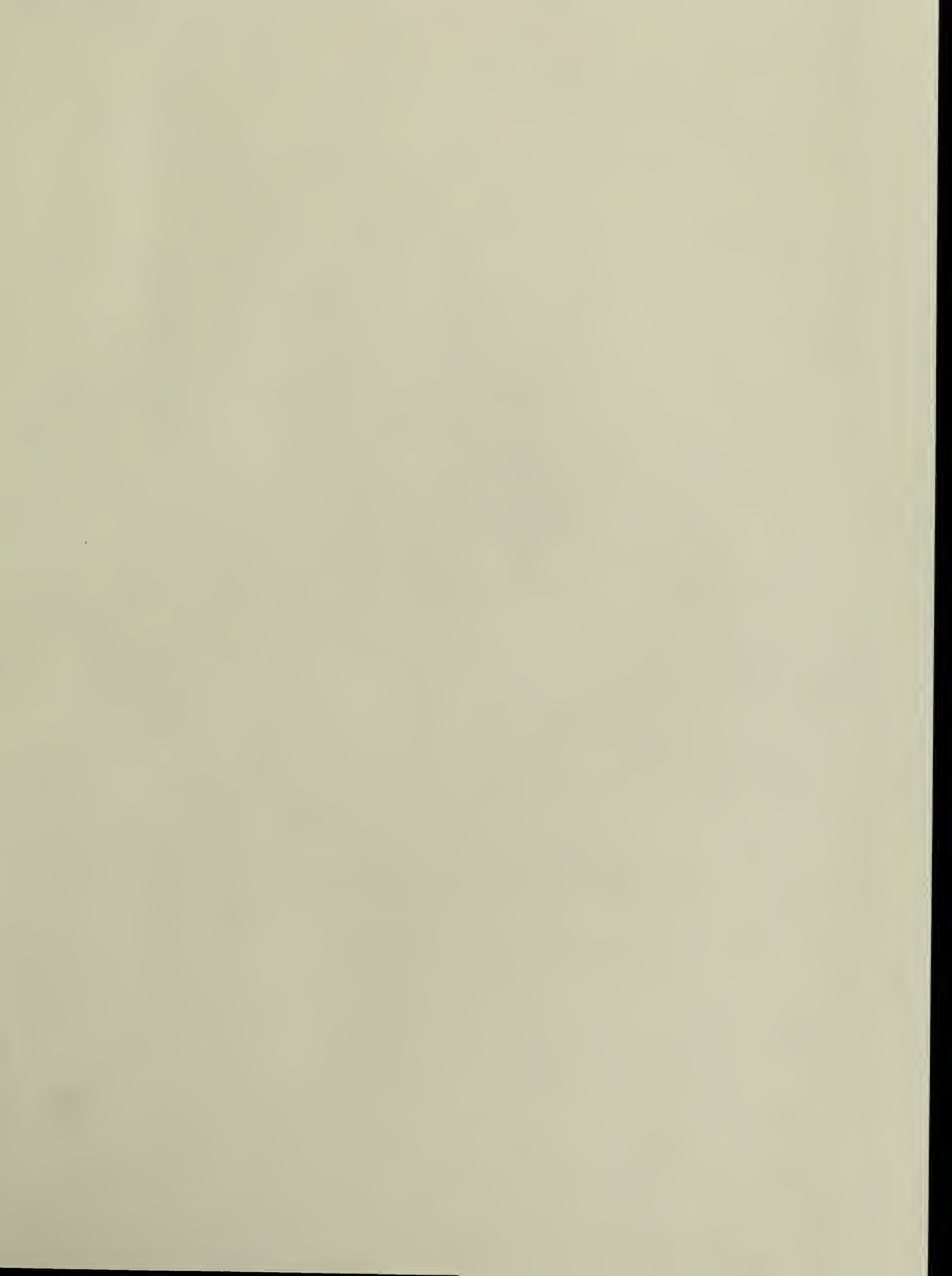
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